

RISK MANAGEMENT IN CONSTRUCTION PROJECTS

Irfan Ansari¹

Pursuing M-tech at Noida International University, Greater Noida, (U.P.)

Rishabh Mahure²

Assistant Professor, Dept. of Civil Engineering, Noida International University, Greater Noida, (U.P.)

Abstract – This thesis describes the development of a framework for a systematic approach to risk management in construction projects, whose application in construction practice would lead to changes and improvements in the construction industry.

Before showing how the framework was developed, there is a survey of what has been written on the subject and a systematic analysis of risk management, risk in construction and process in construction. This led to the conclusion that realizing a construction project is a process and the risk management process should be subordinated to the construction process. A new approach was therefore introduced to managing risk, process driven risk management. This approach will give all the participants in the project better understanding of the construction process, enable changes in the construction industry, and contribute to improvement of quality and efficiency in construction.

Risk has a great impact on the performance of project in India in term of cost, time, and quality. It has increase the size and complexity of the projects and has become the ability to manage risk in all phase of the construction process a central element to prevent unwanted consequences. Key risks are identified in the framework, which are independent of the size, type and purpose of the project being realized. Project related risks should be separately identified for each specific project. Depending on available data, quantitative and qualitative analysis is carried out for the identified risks, their risk probability and risk impact determined, and the corresponding risk exposure calculated. Then the adequate risk response is given for each identified risk, depending on its exposure. As the process unfolds new risks appear in each phase and the management process begins new.

Keyword: Project Risk, Risk Management, Risk Allocation, Construction Project

I. INTRODUCTION

Every construction project passes through phases, each of which has a purpose, duration and scope of work. Risk and uncertainty are inherent in all the phases through which the construction project passes, from demonstrating the need do operation and maintenance. Latham said that no construction project is risk free. Risk can be managed, minimized, shared, transferred or accepted. It cannot be ignored. Risks do not appear only in major projects. Although size may be a cause of risk, complexity, construction speed, site and many other factors that affect time, cost and quality to a greater or lesser degree cannot be

overlooked. All the participants in the deciding process should observe risks and their effects on all key points of decision making before and during project realization.

Process in construction needs important changes and should be continuously improved. The process itself, and the changes and improvement made to it, are accompanied by risks whose adverse effects may increase planned costs and time necessary for project completion and decrease execution quality. Efficient and quality management of risks should make these changes in the construction industry possible and enhance quality and efficiency. Changes may be brought to the construction industry through improved risk management in several ways. One possibility is to study the causes of risk, their probability and their impact on time, cost and quality for a particular type and size of facility.

Risk management is a continuous process needing an integral risk management system in all the phases that the construction project passes through, which is accomplished by developing a framework for process driven risk management. It is necessary to identify the key risks that appear in all the phases through which the construction project passes, regardless of the type and size of the facility

II. OBJECTIVE OF THE STUDY

To investigate how to deal with risks and uncertainties in each phase of the project.

To investigate and assess key-risks in each phase of the project.

To suggest risk response for identified key-risks.

To implement and test the proposed framework using a real case which will demonstrate the benefit of the proposed framework.

III. REVIEW OF LITERATURE

There are several examples of research studies involving risk management in construction project in various forms and application which has practically been implemented as well. The projects as such or in parts have been articulated along with their pros and cons by various firms, organizations and authors. Some of such glimpses are highlighted in the following review components.

1. Amita Pawar et.al., (2017): Gaps and inconsistencies in the knowledge and treatment of construction and project risk are identified. The paper describes, on the basis of a questionnaire survey of general contractors and project management practices in Pune, the construction industry's perception of risk associated with its activities and the extent to which the industry uses risk analysis and management techniques. It concludes that risk management is essential to construction activities in minimizing losses and enhancing profitability. Construction risk is generally perceived as events that influence project objectives of cost, time and quality. Risk analysis and management in construction depend mainly on intuition, judgment and experience. Formal risk analysis and management techniques are rarely used due to a lack of knowledge and to doubts on the suitability of these techniques for construction

2. C. Borysowich (2008): Most organizations are aware that risks do not appear on a linear basis and for this reason risk cannot be identified and measured in this way. Assessing and understanding the interrelation of risk and their associated correlated impact is the real challenge. These complex relationships require a different set of tools. Through the use of tools to simulate multiple risk scenarios and correlating risk interdependencies the organization can begin to build an effective map of their risk landscape. The goal of study was to understand the cumulative impact of risks on performance and value in order to select the appropriate mix between risk retention and risk treatments.

3. Mehdi Ebrat et.al., (2013): Managers require a good understanding about the nature of risks involved in a construction project because the duration, quality, and budget of projects can be affected by these risks. Thus, the identification of risks and the determination of their priorities in every phase of the construction can assist project managers in planning and taking proper actions against those risks. Therefore, prioritizing risks via the risk factors can increase the reliability of success. In this research, first the risks involved in construction projects has been identified and arranged in a systematic hierarchical structure. Next, based on the obtained data an Adaptive Neuro-Fuzzy Inference System (ANFIS) has been designed for the evaluation of project risks. In addition, a stepwise regression model has also been designed and its results are compared with the results of ANFIS. The results show that the ANFIS models are more satisfactory in the assessment of construction projects risks.

IV. METHODOLOGY

Phase I - Identifying and structuring risk within Process Protocol

Each Process Protocol phase is divided into sub-processes, activities that should be performed during the phase. A systematic analysis of the division helped identify and describe the key risks that appear in all construction projects, regardless of size or type.

Phase II - Developing a framework for managing risk in construction projects

The results of Phase I and Phase II served as a foundation for developing a framework for managing risk in the construction project. The framework provides holistic risk assessment from Demonstrating the Need to Operation and Maintenance. After determining risk probability and risk impact, and thus also risk exposure, for each identified key risk or project related risk, a priority risk list is formed and, depending on risk acceptability, a strategy of risk response. If risk response leads to the appearance of new risks, a new cycle of identification, analysis and risk response begins.

Phase III - Application and Verification of the process-driven risk management framework

The last phase shows the application and verification of the proposed process-driven risk management framework using the PP-Risk computer programme developed in the preceding phase.

i) To successfully realise a project it is necessary to identify events that may cause unwanted effects, this means, to identify potential risk sources. Once a risk is identified, it is necessary to assess the probability that it will occur, risk probability, and to estimate the damage that it

may cause to the project, risk impact. The concept of risk exposure as the product of risk probability and risk impact is introduced to enable the relative comparison of several risks within a project. The values of risk exposure are used to make a risk priority list and define the appropriate response to each risk depending on its exposure and position on the risk priority list. Risk response may produce new events that may adversely affect the project and which it is necessary to identify, analyse and anticipate the appropriate response. This is why the risk management process is by its nature cyclical, and why risk management is part of project management and cannot be viewed as a separate whole.

ii) RISKMAN is a risk-driven project methodology. However, even this methodology does not make an allowance for the fact that the construction's life cycle is a process and that risk management should be adapted to this process. Therefore, what is necessary is process-driven risk management.

iii) the Process in construction needs significant changes and continuous improvement. These changes and improvements are accompanied by risks that may have a detrimental effect on planned costs, project duration and project quality. Efficient risk management must enable changes in construction and contribute to quality improvement and greater efficiency.

The framework for risk management in construction proposed in this work is based on process-driven risk management, which completely subordinates the risk management process to the construction process.

iv) To increase efficiency in the construction industry it is also necessary to develop and to continuously advance the group of activities needed for successful project realisation. Process Protocol I resulted in 10 phases through which the construction project passes in its evolution. High-level processes that have to be performed are identified in each phase. Process Protocol II proclaimed these high-level processes as Level I, and then proceeded to divide the Level I processes into Level II sub-processes, and these, in turn and if necessary, into Level III sub-processes. Thus the realisation of any construction project is broken up into elementary processes. The processes on any level are potential risk sources and may serve as the basis for a risk list in each phase. The risk list in the proposed framework has a total of 49 risks, that is, an average of 5 risks per phase, to which project related risks can be added in each phase. This makes risk management part of a generic process leading to the development of process-driven risk management.

v) The priority list is created using the qualitative approach when there is no database about earlier projects to use for the probability distribution function and for determining risk probability. All the necessary indicators for the direct calculation of the consequences, that is the impact that the risky event would have on time, cost or quality, are also missing. Three techniques are offered for qualitative risk analysis in the proposed framework: Multi-attribute Utility Theory, Fuzzy Analysis and Analytical Hierarchy Process (AHP). All the three are programmable and can be included in the corresponding software for decision-making support. A detailed analysis of all the three techniques shows that AHP is the most complete and most adaptable.

vi)The quantitative approach to forming the risk priority list implies that risk probability and risk impact can be explicitly calculated using one of the known quantitative methods of risk analysis. To do this the relevant database must be available to serve for forming the probability distribution, that is to enable the direct calculation of the impact on time, cost and quality.

Table 1: Result of risk analysis for Phase 1

Risk	Probability	Impact	Exposure	Acceptability
101	0.245	0.251	0.061	Acceptable
102	0.044	0.068	0.003	Negligible
103	0.043	0.076	0.003	Negligible
104	0.184	0.189	0.035	Acceptable
105	0.485	0.416	0.202	Undesirable

Table 2: Result of risk analysis for Phase 2

Risk	Probability	Impact	Exposure	Acceptability
201	0.144	0.126	0.018	Acceptable
202	0.289	0.251	0.073	Acceptable
203	0.213	0.162	0.034	Acceptable
204	0.073	0.120	0.009	Negligible
205	0.092	0.153	0.014	Acceptable
206	0.189	0.188	0.036	Acceptable

Table 3: Results of risk analysis for Phase 3

Risk	Probability	Impact	Exposure	Acceptability
301	0.204	0.171	0.035	Acceptable
302	0.384	0.406	0.156	Undesirable
303	0.224	0.259	0.058	Acceptable
304	0.069	0.042	0.003	Negligible
305	0.119	0.122	0.015	Acceptable

Table 4: Result of risk analysis for Phase 4

Risk	Probability	Impact	Exposure	Acceptability
401	0.141	0.134	0.019	Acceptable
402	0.237	0.172	0.041	Acceptable
403	0.136	0.145	0.020	Acceptable
404	0.412	0.342	0.141	Undesirable
405	0.074	0.207	0.015	Acceptable

VI. SUMMARY AND CONCLUSION

The author developed and verified a framework for risk management in construction projects, the development of the framework was preceded by systematic analysis of prior studies of risk management and construction process, which resulted in several conclusions that were used for developing the framework for risk management in construction:

Risk management is by nature a cyclical process. Risks must be identified before the beginning of project realisation or the realisation of any phase through which the project passes. The environment in which the project is realised produces new risks during project realisation. The new risks must be analysed together with those identified and analysed earlier, in a continuous attempt to assess the probability and adverse effect of new risks in

relation to existing ones. This creates the need for continuous risk management in all phases of project realisation.

The execution of a construction project is a process. The process in construction contains many special features in comparison with the process of other industries, which are an impediment for changes leading to process improvement. The risk that the project might be unsuccessful is in fact the risk that particular elements in the construction process might be unsuccessful. Risk management should be subordinated to the construction process. This means that the approach to risk management in construction should be changed from risk-driven project management to process-driven risk management. Improving certain elements of risk management lead to better understanding and to changes, in other words, to improvement of the construction process, which is one of the main goals of the construction industry.

The Construction Process Protocol is by nature a generic process and is thus suitable for the construction process within which the framework for process-driven risk management will be situated. As a plan of work, Process Protocol enables managing the project from Demonstrating the Need to Operation and Maintenance regardless of the type, size and purpose of the project that is being realised. According to Process Protocol, every project can be executed through the successful execution of 10 phases grouped in 4 stages. Every phase contains so-called high-level processes as a group of activities that must be realised for the successful conclusion of that phase. High-level processes are broken down into sub-processes in as many levels as the Protocol user deems necessary for the project. The break down of the process in sub-processes provides a good foundation for identifying key risks that are independent of the project being realised. Sub-processes are potential risk sources so risk management in fact means ensuring the success of each sub-process within the entire construction process. Ensuring the successful execution of the construction process leads to process improvement, which gives additional weight to Process Protocol.

VII. REFERENCES

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EMPLOYEES SATISFACTION AFTER MERGER AND ACQUISITION OF FINANCIAL INSTITUTIONS IN NEPAL

Dr. Jitendra Prasad Upadhyay
(Associate Professor, Nepal Commerce Campus)

Abstract

Background -

Merger and acquisition refer to the aspect of corporate strategy, corporate finance, and management dealing with the buying, selling, and the combination of another company that can help a growing company in a given industry to grow rapidly without having to create another business entity. Merger and acquisition can be threatening for employees and produce anxiety and stress. Patterns of emotional reactions experienced by employees have been identified during merger or acquisition.

Purpose – The purpose of the study is to examine the impact of merger and acquisition on employees' satisfaction in Nepal.

Methodology – Due to the specific nature of research objectives, descriptive-cum-analytical research design has been used.

Findings – Employees are satisfied after merger and acquisition of the Financial Institutions of Nepal.

Keywords – Merger and Acquisition, Working Condition, Employees Turnover, Job Stress and Employees Satisfaction

Paper Type – Research paper.

Background of the Study

Mergers and acquisitions practice are increasing in the organizations to enhance their competitive advantages and expand their operations. Mergers and acquisitions are undertaken on the assumption that 'the combined company will have greater value than the two companies alone' (Cartwright & Cooper, 1993). Merger is the operation by which two companies join together to form a single one. This enables the consolidation and increasing competitive capacity of enterprises. Furthermore, (Buono & Bowditch, 1989) explains a merger transaction is where both parties agree to combine their businesses, and for this purpose form a new company that issues shares which replace the shares of both businesses.

Companies do pay considerable attention to human resource issues during merger and acquisitions beside financial and strategic issues. It is argued that problems of human resources and organizational culture should, however, be given a high priority, along with strategic issues, to increase the likelihood of a successful combination.

Historically, merger failures were only discussed with financial and strategic explanations. Recently there has been growing acceptance among researchers that the human dynamics or the human resource issues after and following the actual merger or acquisition of two or more organizations are significant determinants of merger success or failure (Buono & Bowditch, 1989 and Cartwright & Cooper, 1993). Two reasons have been cited for the failure of merger & acquisitions with regards to human-resource issues or problems. First, the macro level is the issue of cultural compatibility between the merging organizations (Cartwright & Cooper, 1993). Second, a micro level is the role of individuals or employees in the merger process.

The Nepalese financial sector has witnessed a tremendous growth in the number of financial institutions after the 1980's by adopting an economic liberalization regulation with a mixed economic model. Today there are 28 commercial banks, 36 development banks, 25 finance companies and 39 insurance companies are there in Nepal (Economic Survey 2018).

However, the unnatural increment of the Banking and Financial Institutions has brings several financial challenges and complexities. The financial indicator had indicated that the Nepalese financial sector was weak, vulnerable and at the verge of a collapse.

Merger and acquisition are contemporary in the Banking and Financial Institutions of Nepal and will likely remain so for the next few years since the recent moves of NRB policies seems concerned about the mushrooming financial institutions. Monetary policy 2072/2073 that has increased the paid-up capital of Banking and Financial Institutions- 8 billion for commercial bank, 2.5 billion for development bank, and 800 million for finance companies, is a greater issue in the financial sector of Nepal.

Banking and Financial Institutions employees faced an uncertain future after the merger, as new policies were implemented. This resulted in some employee's even resisting change. The management of the BFIs should be focused on human side after merger and acquisitions to minimize the risk of the failure rates of merger and acquisitions.

Objectives of the Study

The main objectives of the study are

- a. To examine the impact of merger and acquisition on employee's satisfaction.
- b. To analyze different human resource issues with respect to merger and acquisition of Banking and Financial Institutions in Nepal.
- c. To explore the effects of merger and acquisition to working condition, employees' turnover and job stress in Banking and Financial Institutions in Nepal.

Rationale of the Study

Merger and acquisitions are the emerging issue in Nepal. There are many reasons for doing merger and acquisition.

- a. This study emphasizes on human resources management through the process of merger and acquisition.
- b. In Nepal human resource issue seems to be neglected after merger and acquisition, so this study supports the improvement of results in the future.
- c. Other researchers may also be benefited from this study; it may serve as a basis for more research in this area i.e. banking and financial or other sectors that involve in mergers.
- d. The result also gives clear ideas to the different organizations about their employees' response, to improve their human resource policy and practices for retention of human capital after merger.

Methodology Used

This study follows both the descriptive and analytical research design. In this study, employee satisfaction is considered as the dependent variable and employee turnover, job stress and working environment are the independent variables.

Two commercial banks one from merger group i.e. NMB Bank Limited (merger with Pathibhara Bikas Bank, Bhrikuti Bikas Bank, Clean Energy Development Bank and Prudential Finance) and another from acquisition group i.e. Citizen Bank Limited (acquiesced

Premier Finance, Nepal Housing & Merchant Finance and People Finance) have been taken as sample for the study. These organizations were selected on the basis of judgmental and convenient sampling methods.

Altogether 35 employees working in different departments in different levels have been selected judgmentally and in a convenient basis as respondents but priority has been given to include respondents from every financial institution involved in merger and acquisition process.

Primary data has been used in this study for finding the relationship between employee satisfaction and merger of the banking and financing sector. 39 structured questionnaires related to different variables were distributed to all the respondents for the study. Questionnaires were then collected by personal visit to the each and every respondent of sample banks. The five-point Likert scale (with 5= strongly agree to 1 strongly disagree) has been used for each of the statement. Cronbach's alpha test has been done for reliability of data.

All collected data has been tabulated and essential statistical values like mean and standard deviation has been calculated to draw the inferences. Correlation and Regression analysis has been used in order to compare and analyze the relationship of the variables.

The data collected from the respondent are presented, analyzed and interpreted for attaining the objectives stated in the study

Table 1

Profile of respondents

Level	NMB Bank Limited			Citizen Bank Limited		
	Male	Female	Total	Male	Female	Total
Upper Level	6	4	10	5	4	9
Middle Level	6	6	12	7	5	12
Lower Level	7	6	13	8	6	14
Total	19	16	35	20	15	35

Source: Field survey 2018

Table 1, shows that number of male respondents is greater than the number of female respondents, i.e. 19 and 20 male respondents in NMB Bank and Citizen Bank respectively. Higher numbers of male respondents have been seen on Lower Level i.e. 7 in NMB Bank & 8 in Citizen Bank. Lower numbers of female respondents i.e. 4 each from both banks have been in found in Higher Level.

Analysis and Findings

Working Environment after merger and acquisition

In this section altogether 12 questions were asked nine related to the working environment and three for employee satisfaction to the respondents of both banks

Table 2**a. NMB Bank Limited**

Working Environment	Gender	Upper Level		Middle Level		Lower Level		Average Mean Value
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Supervisor support and interaction with employees	Male	3.20	1.75	3.34	2.70	3.33	2.96	3.29
	Female	3.45	1.68	3.40	1.98	3.34	3.96	3.40
Satisfied remuneration and other benefits	Male	3.05	1.25	3.50	2.35	3.56	2.75	3.37
	Female	3.12	2.35	3.45	3.01	3.45	2.90	3.34
Enough logistics support for doing work	Male	3.67	0.75	3.55	3.25	3.22	3.21	3.48
	Female	3.50	0.96	3.25	2.95	3.42	2.97	3.39
Average Mean Value								3.38
Employee Satisfaction	Male	3.32	2.35	3.25	2.89	3.52	2.02	3.36
	Female	3.45	3.21	3.12	2.90	3.35	2.05	3.31
Value of Cronbach's Alpha			0.69	Average Mean Value			3.285	

Table 3**b. Citizen Bank Limited**

Working Environment	Gender	Upper Level		Middle Level		Lower Level		Average Mean Value
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Supervisor support and interaction with employees	Male	3.27	1.70	3.38	1.75	3.35	2.06	3.45
	Female	3.48	1.58	3.45	1.90	3.45	3.01	3.47
Satisfied remuneration and other benefits	Male	3.35	1.35	3.65	2.11	3.65	2.65	3.55
	Female	3.32	1.90	3.50	3.35	3.80	2.25	3.54
Enough logistics support for doing work	Male	3.47	2.75	3.35	2.95	3.62	3.20	3.48
	Female	3.35	2.85	3.45	2.85	3.47	2.35	3.43
Average Mean Value								3.49
Employee Satisfaction	Male	3.34	2.25	3.75	3.36	3.45	2.27	3.51
	Female	3.40	2.80	3.50	3.02	3.25	2.25	3.38
Value of Cronbach's Alpha			0.78	Average Mean Value			3.44	

Table 2 and Table 3 show that mean value of overall working environment for both banks have been more than 3, i.e. 3.38 for NMB Bank and 3.49 for Citizen Bank. Similarly, mean value of employee satisfaction is also more than 3 in both cases i.e. 3.49 and 3.44 for NMB Bank and Citizen Bank respectively.

Value Cronbach's Alpha has been 0.69 and 0.78 for questionnaires of working environment and employee satisfaction which is sufficient to explain the consistency of the questionnaire.

Supervisory support, satisfactory remuneration and enough logistic support indicates that working environment after merger has been satisfactory to the employee of both banks. Hence it is concluded that all levels employee either male or female of both banks have been satisfied after merger.

Employee Turnover after merger and acquisition

In this section altogether 12 questions were asked nine related to employees turnover and three for employee satisfaction to the respondents of both banks

Table 4**NMB Bank Limited**

Employees Turnover	Gender	Upper Level		Middle Level		Lower Level		Average Mean Value
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Opportunities for career growth in the banks	Male	3.35	1.60	3.18	1.55	3.25	2.12	3.26
	Female	3.49	1.52	3.15	1.95	3.35	2.05	3.33
Any humiliation / misbehave from the co-workers	Male	2.30	1.95	2.15	2.05	2.05	2.95	2.17
	Female	2.22	1.99	1.50	2.35	1.95	2.85	1.89
Bank's policy for retention of its employee	Male	3.25	2.25	3.25	3.05	3.66	2.27	3.39
	Female	3.15	2.35	3.40	2.95	3.78	2.85	3.43
Average Mean Value								2.92
Employee Satisfaction	Male	3.39	2.35	3.35	3.15	3.75	2.97	3.50
	Female	3.48	2.85	3.55	2.52	3.55	2.86	3.53
Value of Cronbach's Alpha			0.65	Average Mean Value			3.15	

Table 5**Citizen Bank Limited**

Employees Turnover	Gender	Upper Level		Middle Level		Lower Level		Average Mean Value
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Opportunities for career growth in the banks	Male	3.15	2.10	3.28	2.55	3.35	2.22	3.26
	Female	3.14	2.12	3.45	2.25	3.25	2.15	3.28
Any humiliation / misbehave from the co-workers	Male	2.25	2.55	2.25	2.25	2.15	2.57	2.22
	Female	2.12	2.19	1.57	2.15	1.85	2.48	1.85
Bank's policy for retention of its employee	Male	3.35	2.45	3.26	3.02	3.47	2.32	3.36
	Female	3.45	2.55	3.42	2.25	3.27	2.55	3.38
Average Mean Value								2.89
Employee Satisfaction	Male	3.30	2.49	3.37	3.05	3.37	2.37	3.35
	Female	3.42	2.39	3.58	2.47	3.35	2.26	3.45
Value of Cronbach's Alpha			0.72	Average Mean Value			3.40	

Table 4 and Table 5 shows that mean value of employee turnover for both banks have been near to 3, i.e. 2.92 and 2.89 for NMB Bank and Citizen Bank respectively. Similarly, mean value of employee satisfaction is also more than 3 in both banks i.e. 3.15 and 3.40 for NMB Bank and Citizen Bank respectively.

Value Cronbach's Alpha has been 0.65 and 0.72 for questionnaires of employee turnover and employee satisfaction which is sufficient to explain the consistency of the questionnaire.

Positive response on opportunity for career growth and bank's policy of retention of its employee indicates that employee turnover after merger has been low, which is also supported by below average value of humiliation and misbehave from the coworkers after merger. All levels employee either male or female of both banks have been satisfied after merger.

Job Stress after merger and acquisition

In this section altogether 15 questions were asked 12 related to job stress and three for employee satisfaction to the respondents of both banks

Table 6**NMB Bank Limited**

Job Stress	Gender	Upper Level		Middle Level		Lower Level		Average Mean Value
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Fear about losing job	Male	3.05	3.10	3.18	3.15	3.26	2.12	3.16
	Female	3.10	3.15	3.35	3.05	3.22	2.35	3.22
Working condition of banks i.e. problem in working with different groups	Male	3.20	3.65	3.25	2.75	3.15	2.50	3.20
	Female	3.12	3.29	3.50	2.67	3.65	2.42	3.42
Adoption of change	Male	3.25	3.12	3.65	3.12	3.42	2.38	3.43
	Female	3.15	3.155	3.48	2.75	3.47	2.35	3.37
Grievance handling mechanism	Male	3.32	3.19	3.35	3.12	3.49	2.32	3.39
	Female	3.32	3.27	3.50	3.47	3.45	2.33	3.42
Average Mean Value								3.33
Employee Satisfaction	Male	3.17	3.10	3.25	3.25	3.55	2.86	3.32
	Female	3.16	2.92	3.25	3.45	3.65	2.95	3.35
Value of Cronbach's Alpha			0.83	Average Mean Value			3.34	

Table 7**Citizen Bank Limited**

Job Stress	Gender	Upper Level		Middle Level		Lower Level		Average Mean Value
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Fear about losing job	Male	3.11	2.90	3.19	2.85	3.36	2.82	3.22
	Female	3.13	3.10	3.27	2.87	3.28	2.75	3.23
Working condition of banks i.e. problem in working with different groups	Male	3.21	3.05	3.26	2.65	3.19	2.59	3.22
	Female	3.22	3.22	3.47	2.66	3.55	2.52	3.41
Adoption of change	Male	3.23	3.02	3.35	3.02	3.29	2.36	3.29
	Female	3.25	3.17	3.38	2.99	3.27	2.39	3.30
Grievance handling mechanism	Male	3.22	3.12	3.45	3.07	3.18	2.41	3.28
	Female	3.27	3.22	3.60	3.28	3.20	2.45	3.36
Average Mean Value								3.29
Employee Satisfaction	Male	3.27	3.16	3.65	3.26	3.36	2.66	3.43
	Female	3.26	2.85	3.63	2.89	3.54	2.49	3.48
Value of Cronbach's Alpha			0.86	Average Mean Value			3.46	

Table 6 and Table 7 show that all employees either male or female of all levels have not felt job stress since the value of all have been more than 3. Value of working with other employees, fear of losing job, adoption of change and grievance handling mechanism have been more than 3 clearly support that employees of both banks have not feel any kind of job stress after merger and acquisition. Value of employees' satisfaction due to job stress after merger has been more than 3, i.e. 3.46 also indicates the satisfaction level of employees. Value Cronbach's Alpha has been 0.83 and 0.86 which is sufficient to explain the consistency in the responses of for questionnaires of job stress and employee satisfaction.

Relationship between Employee Satisfaction with Working Environment, Employee Turnover and Job Stress

Correlation matrix and regression have been computed to assess the extent of relationship in between the variables of employees' satisfaction with working environment, employee turnover and job stress.

Table 8**Correlation among the study variables**

	Employees Satisfaction	Working Environment	Employees Turnover	Job Stress
Employees' Satisfaction	1			
Working Environment	.630**	1		
Employee Turnover	.325**	.352**	1	
Job Stress	.403**	.373**	.531**	1

Table 8 clearly shows that all the variables have been positively correlated to each other at 5% level of significance. Correlation between employee satisfaction and job stress & employee turnover has been low i.e. .403 and .325 indicate that job stress and employee turnover have lower impact on employees' satisfaction after merger.

Regression among the variables**Table 9**

Details	Working Environment	Employee Turnover	Job Stress
b (Coefficient)	2.126	1.102	2.253
R Square (%)	82.2	74.4	68.6
"t" Value	1.915	2.421	2.189
Significance	.002	0.025	0.115

On simple observation of table 9, it has been clear that there exists a positive relationship between Employee Satisfaction with Working Environment, Employee Turnover and Job Stress. About 68% to 82% of variance of employee satisfaction has been explained by job stress, employee turnover and working environment.

Conclusion

Merger and acquisitions significantly affect the performance and contribution of the employees. Therefore, banks should focus on providing better working environment, minimizing job stress and turnover rate of the employees to achieve better performance from their employees. Banks should identify the different factors of employee satisfaction after merger and acquisitions which has positive and negative impact on employee satisfaction. All the employees who are working in different banks are satisfied when they are exercising the authority, quality of work life and overall satisfaction with working environment.

Employees of both banks i.e. NMB Bank Limited and Citizen Bank Limited are satisfied after merger and acquisition. The correlation among the working condition, employee turnover & job stress show positive relation with employee satisfaction. This shows that all the factors are equally responsible for the employee satisfaction after merger. This is also supported by the regression result giving the significant impact of worker condition, employees turnover and job stress on employee satisfaction after merger.

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OPTIMIZATION OF PROCESS PARAMETERS OF MILLING OPERATIONS USING VORTEX TUBE COOLING SYSTEM

Mr. Pradeep Kumar
Assistant Professor

Neelkanth Institute of Technology
Meerut

Mr. Gaurav Bhardwaj
M.Tech Scholar

Dr. A P J Abdul Kalam Technical University
Lucknow

ABSTRACT

The purpose of this work is to study and analyze the effectiveness of Vortex tube as a cooling system for milling operation. The vortex tube, also known as the Ranque-Hilsch vortex tube, is a mechanical device that separates a compressed gas into hot and cold streams. It is a simple and useful device without any moving parts, electrical or chemical power input or special equipments which produces desired cold or hot air economically. Use of vortex tube reduces the need for liquid coolant, which is messy, expensive, and environmentally hazardous. In this work surface finish of mild steel is compared after milling operation when dry machining is done without using any coolant and when cold air from vortex tube is used as a coolant in milling operation. It has been found that the 'Cutting speed' and the 'Feed' are the two major factors that significantly affect the surface finish and their optimum values were determined. Finally, the production trials were conducted with optimized process parameters value and other suggested countermeasures, it resulted in high surface finish and neat and clean machining environment.

Key words: Milling, Coolant, Vortex tube, Surface Roughness

INTRODUCTION

Metal cutting generates heat which influences the quality of a finished product, the force needed in cutting as well as limiting the life of the cutting tool. There are various attempts by researchers all over the world to understand the mechanism and theory behind the temperature built-up during machining in order to achieve optimized machining procedure and best workpiece results. Higher production rate with required quality and low cost is the basic principle in the competitive manufacturing industry. This is mainly achieved by using high cutting speed and feed rates. Nevertheless, elevated temperatures in the cutting zone under these conditions shorten tool life and adversely affect the dimensional accuracy and surface integrity of component. It is known that cutting fluids, when properly chosen and applied, are used to minimize problems associated with high temperature and high stresses at the cutting edge of the tool during machining because of the lubrication, cooling, and chip flushing functions of the fluids. Also, the effectiveness of fluids depends on their ability to penetrate the chip-tool interface and to form a thin layer in the shortest available time, either by chemical attack or by physical adsorption, with lower shear strength than the strength of the material in the interface.

VORTEX TUBE COOLING SYSTEM

The vortex tube, also known as the Ranque-Hilsch vortex tube, is a mechanical device that separates a compressed gas into hot and cold streams. Fig. 1.1 depicts the basic construction of a Ranque-Hilsch vortex tube in which the air emerging from the "hot" end can reach

temperatures of 150°C , and the air emerging from the "cold end" can reach -30°C . It has no moving parts. Pressurized gas is injected tangentially into a swirl chamber and accelerated to a high rate of rotation. Due to the conical nozzle at the end of the tube, only the outer shell of the compressed gas is allowed to escape at that end. The remainder of the gas is forced to return in an inner vortex of reduced diameter within the outer vortex.

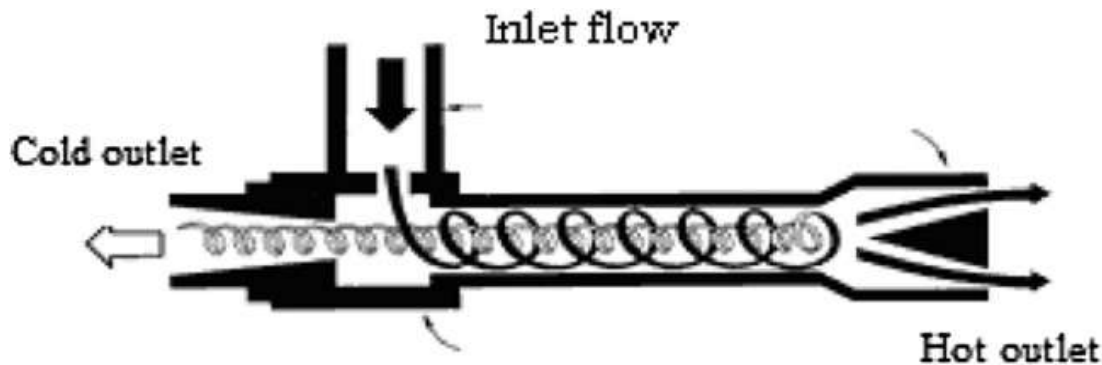


Fig 1.1 Vortex tube

SELECTION OF SIGNIFICANT PROCESS PARAMETERS OF MILLING

Milling is one of the important machining operations. In this operation the workpiece is fed against a rotating cylindrical tool. The rotating tool consists of multiple cutting edges (multipoint cutting tool). There are various process parameters in a milling operation. Some of them are very important which affects the output to a great extent and some are less important. Surface finish is mainly the result of process parameters such as tool geometry and cutting conditions (feed rate, cutting speed, depth of cut), but in addition there is also a great number of factors influencing surface roughness. The significant milling parameters which are primarily responsible for the surface finish was selected by studying the milling process and previous research papers. The non significant process parameters were dropped and the significant parameters are selected for the further analysis and optimization. The four process parameters, cutting speed, depth of cut, feed and type of coolant were found most significant. Table 1.1 displays the significant process parameters and their level.

TABLE 1.1: PROCESS PARAMETERS FOR MILLING OF MILD STEEL

Response Variable – Average surface roughness value

Process Parameters	Level 1	Level 2	Level 3	Level 4
Cutting speed (RPM)	400	500	600	700
Depth of cut (mm)	1	1.5	2	2.5
Feed (mm/rev)	0.5	1	1.5	2
Type of coolant	Limited to two levels (i) Dry machining and (ii) Using vortex tube as cooling system			

OPTIMIZATION OF PROCESS PARAMETERS USING TAGUCHI METHOD

Optimization of significant process parameters was done by using Taguchi method. In present study, an L_{16} orthogonal array was used. This array has fifteen degrees of freedom and it can handle three process parameters. Each milling parameter was assigned to a column

and sixteen milling parameter combinations were tested. The four most significant process parameters, cutting speed, depth of cut, feed and type of coolant were selected and tried with different combination of process parameter level. From the four significant process parameters one process parameter i.e. type of coolant could not be divided into different levels, only two levels were taken. Once the experimentation was performed without any coolant i.e. dry machining and second variation involved was the case of machining with vortex tube cooling system. Hence the combinations of remaining three most significant process parameters were tried for different levels within the permissible range according to workpiece material characteristics and machinability. In this regard, brain-storming was done with the lab technician of the Neelkanth Institute of Technology, Meerut, (U.P) and industry personnel.

The main aim of the study was to reduce the surface roughness for which the ideal value is zero, the analysis was carried out by using MINITAB-17 statistical software in which the S/N ratio was computed by using the smaller the better quality characteristics; $n = [-10 \log_{10}(\text{mean of sum of squares of measured data})]$. In the Taguchi method, the signal to noise ratio (S/N) was used as the data transformation method that consolidates the data for each control array row over the various noise levels into one value which computes both the mean and the variation present in the data. The equations for calculating the signals to noise ratios were based on the characteristics of the response variables being evaluated; nominal the best, smaller the better and larger the better. In the present work the main objective was to reduce the surface roughness value. The surface roughness value for each trial was evaluated and the report generated was obtained from MINITAB-17 statistical software.

The S/N ratio was obtained using Taguchi's methodology. Here, the term 'signal' represents the desirable value (Mean) and the 'noise' represents the undesirable value (standard deviation). Thus, the S/N ratio represents the amount of variation presents in the performance characteristic. Here the desirable objective was to optimize the response variables Ra. Hence a smaller-the-better type S/N ratio was applied for transforming the raw data for surface roughness as smaller values of Ra was desirable.

Total sixteen experiments were conducted as suggested by L_{16} orthogonal array. Sixteen samples of mild steel of size 48 x 46 x5 mm were prepared. Each experiment was performed on a different mild steel sample of standard size. Surface roughness of each sample was measured using surface roughness tester. Three values of surface roughness were recorded and average of these three values was taken for further analysis. The average values of surface roughness are tabulated in table 1.2.

TABLE 1.2: AVERAGE SURFACE ROUGHNESS VALUE OF TRIAL AND S/N RATIO

S. No.	Cutting speed in (RPM)	Depth of cut in (mm)	Feed in (mm/rev)	Average surface roughness R_a in (μin)	S/N Ratio
1	400	1	0.5	16.55	-24.3760
2	400	1.5	1	8.07	-18.1375
3	400	2	1.5	15.50	-23.8066
4	400	2.5	2	15.20	-23.6369
5	500	1	0.5	3.18	-0.256744

6	500	1.5	1	1.15	-1.21396
7	500	2	1.5	2.50	-7.95880
8	500	2.5	2	5.20	-14.3201
9	600	1	0.5	10.50	-20.4238
10	600	1.5	1	6.50	-7.95880
11	600	2	1.5	8.50	-18.5884
12	600	2.5	2	3.25	-10.2377
13	700	1	0.5	1.32	-2.41148
14	700	1.5	1	1.13	1.023
15	700	2	1.5	3.50	6.02060
16	700	2.5	2	1.50	-3.52183

FABRICATION OF VORTEX TUBE

Vortex tube was fabricated by using PVC pipes. Dimensions of each part were selected by studying various research papers related to the design of vortex tube. Fabrication detail of all parts is explained as follows:

I. Main Body

Main body of the vortex tube is the middle part of the tube as shown in the fig. 1.2. It is a PVC pipe of diameter 38 mm and length 70 mm. Inlet nozzle was fitted to this part which receives compressed air from the compressor.

II. Cold Tube

Cold tube is the short length tube on the right side of the main body. It is also a PVC pipe of diameter 25 mm and length 100 mm. One end of cold tube was fitted into the main body and other end was open and reduced to a size of 10 mm with a reducer as shown in fig. 1.2.

III. Hot Tube

Hot tube is the long tube on the left side of the main body. It is also a PVC pipe of diameter 25 mm and length 280 mm. One end of hot tube was fitted into the main body and in other end conical wooden valve was inserted as shown in fig. 1.2.

IV. Inlet Nozzle

Inlet nozzle is a very important part of the vortex tube which provides the required kinetic energy to the compressed air. In the given vortex tube inlet nozzle used, was a mild steel nozzle of 10 mm diameter. It was inserted into the main body of the vortex tube and leak sealant was applied on the joint to prevent leakage.

V. Conical Valve

Conical valve controls the flow of hot air from the hot tube. It was fabricated from a wooden piece of 30 mm diameter and 100 mm length. It was further machined to conical shape on a lathe machine. Angle of conical valve used at the hot end is 45°. This valve was adjustable at the hot end of the vortex tube.

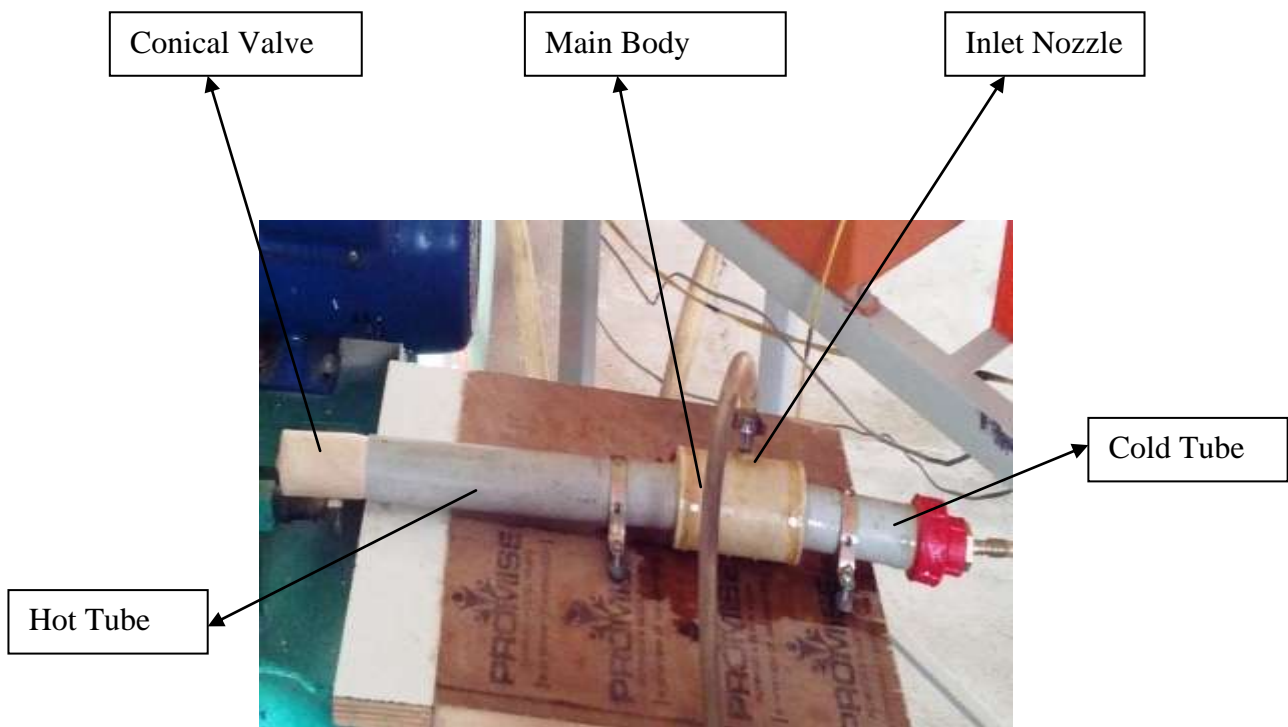


Fig 1.2 Fabrication of vortex tube

EXPERIMENTAL VALIDATION

Milling is a widely used manufacturing process in the industry. After deep study of all the factors it was observed that the major factors responsible for surface roughness of the product were cutting speed, depth of cut, feed and type of coolant, amount of coolant used. The process parameters of milling using vortex tube as a cooling system were optimized to get a least value of average surface roughness. Taguchi Method was adopted for this specific purpose which had capabilities to design a set of experiments according to process parameters and their stages under the fixed tolerance limits.

COMPARISON OF SURFACE FINISH ON MILD STEEL SPECIMENS

Main objective of this work was to utilize vortex tube as a cooling system and to use cold air from the cold end of the vortex tube as coolant in milling operation. Milling operation was performed on mild steel specimens of dimensions 48 x 46 x 5 mm. milling machine with a horizontal arbor of 25 mm diameter was used for this work. Eight samples were taken from prepared standard size mild steel specimens and milling operation was carried out with optimized process parameters i.e. speed, depth of cut and feed. These samples were machined without using any coolant and with vortex tube cooling system. Surface roughness was measured using Surftest SJ-210 measuring instrument.

RESULTS AND DISCUSSION

The average value of S/N ratio for each level for each factor obtained is shown in Table 1.3. The table includes ranks based on delta statistics, which compare the relative magnitude of effects. The delta statistic is the highest minus the lowest average for each factor. Minitab assigns ranks based on delta values; rank 1 to the highest delta value, rank 2 to the second highest, and so on. The ranks indicate the relative importance of each factor to the response. The ranks and the delta values show that **cutting speed** has the maximum and the **depth of cut** has the minimum effect on surface roughness value.

TABLE 1.3: RESPONSE TABLE FOR SIGNAL TO NOISE RATIOS

[Smaller is better $[-10 \cdot \log_{10}(\sum(Y^{**2})/n)]$]

Process Parameters	Level-1	Level-2	Level-3	Level-4	Δ	Rank
					(Max-min)	
Cutting speed	-22.4892	-5.9374	-16.3770	0.0218	22.5111	1
Feed	-11.9250	-5.6528	-14.6376	-12.5664	8.9848	2
Depth of cut	-11.8670	-8.9024	-11.0833	-12.9291	4.0267	3

Fig. 1.3 shows the main effect plots for signal to noise ratio. These graphs show the variation of mean of S/N ratio with levels of selected process parameters. Plot of cutting speed shows that at minimum value of cutting speed in selected range i.e. 400 RPM, signal to noise ratio is also minimum. S/N ratio increases when speed increases from 400 to 500 RPM, because surface roughness value decreases when cutting speed increases during milling. S/N ratio decreases when speed increases from 500 to 600 RPM which means surface roughness value increases for this range of cutting speed. This increment in the surface roughness value was either due to the non homogeneous material or due to use of older milling machine. S/N ratio again increases when speed increases from 600 to 700 RPM. Hence for cutting speed, the optimum value is 700 RPM as the S/N ratio is maximum at this speed. Plot of depth of cut shows that S/N ratio is minimum at maximum value of depth of cut in the selected range i.e. 2.5 mm because surface roughness increases when depth of cut increases. The optimum value of depth of cut for which S/N ratio has maximum value is 1.5 mm. Plot of feed shows that S/N ratio increases between 0.5 to 1 mm/rev and decreases afterword because excessive feed decreases the surface finish. For the parameter feed, the optimum value is 1 mm. Maximum value of S/N ratio indicates that particular parameter has maximum desirable effect on objective of the experimentation.

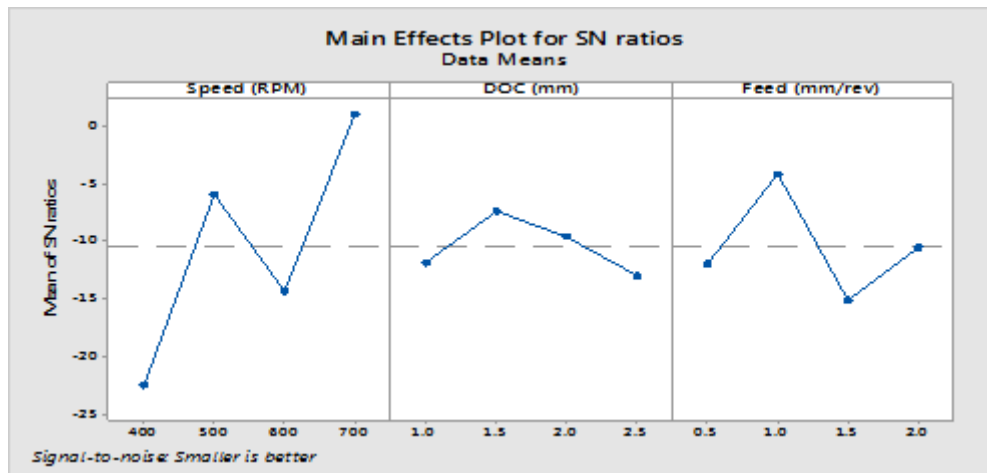


Fig 1.3 Main effects plot for S/N ratios

ANALYSIS OF VARIANCE

The analysis of variance (ANOVA) for S/N ratio was computed in order to identify the milling process parameters which significantly affect the surface roughness. The data for each factor was tested for F value to find significance of each factor. The Null hypothesis testing is valid when computed F value is less than standard F value and computed P value is higher than the standard P value, otherwise the factors significantly affect the quality characteristic. For the present experiment the standard F value is 19.00 and the standard P value is 0.05 for F distribution curve with 95% confidence level. It is evident from the Table 1.4 that:

- The computed F values for the cutting speed (F value 56.3) and feed (F value 22.78) were higher than standard F(19.00) value and the computed P value was lower than the standard P value indicating that these were the factors that significantly affect the surface finish.
- The computed F value for depth of cut (F value 1.32) was less than the standard F value thus the effect of this factor was found insignificant.

TABLE 1.4: ANALYSIS OF VARIANCE FOR S/N RATIOS

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Cutting speed	3	1231.49	1231.49	410.497	56.39	0.000
Depth of cut	3	34.91	34.91	11.636	1.32	0.354
Feed	3	172.92	172.92	59.975	22.78	0.024
Error	6	53.09	53.09	8.848		
Total	15	1499.41				

Table 1.5 shows the significant factors and their corresponding values.

TABLE 1.5: SIGNIFICANT FACTORS AND THEIR VALUES

S. No.	Factors	Affecting variation	
		Contribution	Best level
1	Cutting speed,	Significant	700 RPM
2	Feed,	Significant	1 mm
3	Depth of cut,	Insignificant	–

CONFIRMATION TRIALS

The final step was to predict and verify the reduction in the average roughness value after implementing the suggested process parameters. The Taguchi method for design of experiment specifies that level of parameters which has the maximum S/N ratio as the optimum parameter. Therefore the level of process parameters which had the maximum S/N ratio was selected as the optimum process parameter for the final trial tests to verify. Table 1.6 and 1.7 shows the values of average surface roughness in case of no coolants and in case of vortex tube cooling system.

TABLE 1.6: CONFIRMATION TRIAL RESULTS FOR USING NO COOLANTS

S. No.	Cutting speed in (RPM)	Depth of cut in (mm)	Feed in (mm/rev)	Average surface roughness R_a in (μin)
1	700	1.5	1	2.54
2	700	1.5	1	3.30
3	700	1.5	1	1.80
4	700	1.5	1	2.70
5	700	1.5	1	3.65
6	700	1.5	1	2.80
7	700	1.5	1	5.15
8	700	1.5	1	2.51

TABLE 1.7: CONFIRMATION TRIAL RESULTS FOR VORTEX TUBE COOLING

S. No.	Cutting speed in (RPM)	Depth of cut in (mm)	Feed in (mm/rev)	Average surface roughness R_a in (μin)
1	700	1.5	1	1.23
2	700	1.5	1	1.30
3	700	1.5	1	1.35
4	700	1.5	1	1.70
5	700	1.5	1	1.13
6	700	1.5	1	1.03
7	700	1.5	1	1.05
8	700	1.5	1	1.41

The Average value of surface roughness obtained in eight trials for the case of without using any coolant during milling operation is 3.056 μin . Whereas the average value of surface roughness obtained in eight trials for the case in using vortex tube cooling system during milling operation is 1.275 μin .

The percentage reduction in surface roughness by using vortex tube cooling system is calculated as 58.27%.

CONCLUSIONS

In the present work, experimental investigations of milling operation were carried out to obtain an improved quality surface finish by using vortex tube as a cooling system. The following conclusions are drawn from the present investigation:

- It is concluded that vortex tube can be utilized as a cooling medium in the milling operation. Fabrication of vortex tube was made possible by PVC pipes.
- The temperature difference between hot end and cold end of the vortex tube was recorded as 12.6 °C.
- It is concluded that cutting speed and feed are major factors that significantly affect the surface roughness of the mild steel during the milling operation. The other factor, Depth of cut is found to be insignificant. It is concluded that optimum value for cutting speed is found to be 700 RPM and for feed it is 1mm/rev.
- Percentage reduction in surface roughness by using vortex tube cooling system is calculated as 58.27%.
- Vortex tube cooling serves as a neat and clean coolant for milling operation and gives a pollution free machining operation with a good surface finish.

LIMITATIONS OF THE PRESENT WORK

Although an optimum experimental work has been done to investigate the application of vortex tube as a cooling system for milling operation but still there are some limitations of present work. While carrying out the present work, the following limitations were encountered.

- Temperature of the cold air used as coolant during milling operation can not be decreased much.
- The experiment was conducted on the semi automatic milling machine available in the lab of Neelkanth Institute of Technology, Meerut, (U.P).
- Cold air jet from vortex tube was directed toward tool workpiece interface manually due to which quality of surface finish was reduced in some experiments.
- Conical valve at the hot end side of the vortex tube was also operated manually which caused some disturbance in the value of cold air temperature.

SCOPE FOR FUTURE WORK

The following research areas are recommended to be undertaken for obtaining minimum surface roughness in milling operation.

- Study need to be conducted to obtain the minimum temperature at the cold end of the vortex tube.
- Study need to be conducted for fabrication of the vortex tube from different type of materials.
- Study need to be conducted for more levels of the milling process parameters.
- Study need to be conducted for different angles of conical valve.
- Study need to be conducted for automatic movement of the conical valve during operation.

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STUDY ON THE COMPRESSIVE STRENGTH OF SELF-COMPACTING CONCRETE WITH PERCENTAGE REPLACEMENT OF CEMENT WITH GROUND GRANULATED BLAST FURNACE SLAG

Mr. Kshitij Kamal Saxena

Scholar at Vivekanand College of Technology & Management, Aligarh

Abstract-

In the last few years, the use of Self Compacting Concrete (SCC) is increasing and there has been a lot of research and amendments to produce self compacting concrete, which have the desired characteristics. In the form of raw materials in concrete, there is a current trend around the world to treat and treat untreated industrial by household wastes etc. Not only do they help reuse waste products, but also create a clean and green environment. The current study focuses on the use of ground granular blast furnace slag (GGBS) as partial replacement of fine aggregate and cement respectively in SCC. In this paper, experimental study is done on fresh and rigorous properties such as the ability to flow, ability to pass, the compressible strength of the M50 grade of the SCC. In this investigation, SCC was partially made with partial change with granite sludge with GGBS and cement. Five mixes with different percentages of Granite Sludge (0%, 5%, 10%, 15% and 20%) as partial replacement for cement (0%, 10%, 20%, 30% and 40%) of GGBS as partial replacement for fine aggregate (M-sand) is considered. Functional and rigid test are conducted for each mixture respectively. Examination results for strict quality are done in 7, 28 days respectively. The purpose of this research is to know the behavior and mechanical properties of self compacting concrete after connecting industrial wastes in different proportions by a test such as compressive strength. The results obtained are discussed and the conclusion is finally concluded accordingly.

Keywords— SCC, GGBS, Granite Sludge, Compressive strength.

Introduction-

The improvement of new innovation in physics is moving forward quickly. In the recent three decades, a great deal of research worldwide has been completed to increase the performance of self compacting concrete, as far as strength and durability are concerned. Consequently concrete is no longer a building material containing cement, composite and water, although the construction industry has changed into a specially adapted material with some new components to meet the special needs. In the SCC, focused on the use of granite mud and GGBS respectively, which is in the form of a fine aggregate (M-sand) and partial replacement of cement. Self-Compacting Concrete (SCC) is a streaming concrete mix that can be consolidated under its special weight. The extremely liquid nature of the SCC makes it suitable for keeping it in difficult conditions and in the section with overcrowded reinforcement. The use of SCC can also help in narrowing the loss related to hearing on the workplace incited by concrete vibrations. Another advantage of SCC is that the time needed to keep the larger section is widely used. Convergent convergence in limited areas, where consolidation can not be appropriate. For example, repairs of the base sides of columns, girders and slabs often require limited and difficult filling to achieve access points. To encourage concrete placement and to ensure stability, the SCC can be used in various categories, including filling complex formwork and casting of tunnel lining sections with

limited access to consolidation. Due to industrialization, there is heavy use of granite waste, GGBS etc. and there are industrial wastes and this creates a threat to the environment, hence the cost of the structure is reduced. Similarly to make the structure more sustainable, the issue of this material is reduced.

The purpose of this research-

This research has been started so that it can be utilized for subsequent efforts to create the effort made.

- a) To study the properties of self compacting concrete.
- b) Made by GGBS to replace cement by granite mud and M-sand.
- c) Finding new and rigid properties of SCC by different methods.
- d) Studying comparisons

Literature Review-

Now the one-day concrete is around the accepted and most used construction material. Essentially concrete cement, fine aggregate, thick aggregate, water is made and in addition there is some time with the increase of mineral and chemical mixture. Due to the increase in development, the demand for concrete is increasing and at the same time the access to various components of cement and concrete can be ended. It may be less than the use of industrial by products as a replacement material, which will not affect the properties of concrete. Previous research has argued that the use of granite waste and GGBS produces mechanical properties of concrete and apart from this, the expansion of these materials in self-compacting concrete will not change the properties further. In [1,2,3] Dosages of super-plasticizers used for mixing, packing, combing water, and additions are key points affecting SCC properties. Thus, he proposed another mix design method for self-compacting concrete. Finally Nan Su method could be used to produce effectively SCC of high quality. Compared with the other technique created by the Japanese Ready-Mixed Concrete Association (JRMCA), this method is less complex, easier for implementation and less time-consuming, requires a smaller amount of binders and saves cost. From [4, 5, 6, 7, and 8] Maximum 20% partial replacement of cement with granite waste has expanded the quality parameters of self compacting concrete. In [9, 10, 11, 12] The correct aggregate has been changed to 30% with GGBS. It has been found that compressive strength, tensile strength and flexure power increment have been divided with increasing the replacement rate of fine aggregates with GGBS. Concrete is to be kept 0%, 5%, 10%, 15% and 20% for the same, and the fine gross is replaced by GGBS as 0%, 10%, 20%, 30% and 40%.

Cement-

Cement may be defined as the binding material posses binding property which helps in combining with other inert material to form a dense assembly.

Corporal properties

Cement is generally characterized according to its corporal properties for aiming quality control. Corporal properties of cement are accustomed to differentiate and to analogize the various cements.

Following are the various corporal properties of cement

- Time of setting
- Soundness
- Fineness
- Strength

Composition of Portland Pozzolona Cement

The major ingredients of PPC are as follows.

- Calcium
- Alumina
- Silica
- Iron

Calcium is generally obtained from limestone, marl or chalk. While silica, alumina and iron come from sand, clays and iron ores.

Contents	Percentages
CaO	60 – 67
SiO ₂	17 – 25
Al ₂ O ₃	3 – 8
SO ₃	2 - 3.5
Alkalis	0.3 – 1.2
MgO	0.5 - 6
Fe ₂ O ₃	0.5 – 6

Table1: Percentage of materials present in cement

The major compound generally form after the addition of water in cement known as Bogus Compounds are as follows

- Tri calcium Aluminate (C3A)
- Tetra Calcium Alumino Ferrate (C4AF)
- Tri Calcium Silicate (C3S)
- Di Calcium Silicate (C2S)

Setting and Hardening-

When water is assorted with Pozzolona Cement, The various ingredient of cement undergoes a chain of chemical reactions which causes it to harden. This process of chemical reaction is known as hydration process and heat generates from these reaction is known as heat of hydration. These chemical reactions give some compounds which are known as BOUGs compound responsible for the properties of cement. These compounds plays an important role in the hardening of cement are described as follows as per their formation

- **Tri calcium Aluminates (C3A)** – This compound form after the addition of water in cement within 24 hours. This compound generates maximum hydration's heat and accountable for the precociously strength of cement.
- **Tetra calcium Alumino ferrite (C4AF)** – This compound also forms after the addition of water in cement within 24 hours but after the configuration of C3A.This compound contributes very little amount of energy in the cement.
- **Tri calcium silicate (C3S)** - This compound gives major contribution in hydration's heat also accountable for precociously strength of cement.

- **Di calcium silicate (C2S)-** This compound forms after one year of addition of water in cement. This compound is responsible for the progressive strength of cement. This compound generates least heat of hydration.

Grounded Granulated Blast -furnace Slag

The grounded granulated blast furnace slag (GGBS) is a by- product produced from iron factory during formation of iron. Iron ore, coke and lime stone through in blast furnace and treated at temperature 1400 °C to 1600°C than it flowing on the top of molten iron in the form of fane. When the metallurgical smelting technique is complete, the lime in the flux has been chemically combined with the aluminates and silicates of the ore and coke ash to form a non-metallic product called blast furnace slag.

During the period of cooling and hardening from its molten state, blast furnace slag can be cooled in several ways to form any of several types of Blast furnace slag products. Its chemical composition is nearer to the chemical composition of cement that because it can be used in cement concrete.

Granulated Slag

Granulated slag is rapidly cooled by large quantities of water to produce a sand-like granule that is primarily ground into a cement commonly known as GGBS (Ground Granulated Blast Furnace Slag), or Type S slag cement. It is additionally mixed with Portland cement clinker to create a homogenized Type IS cement.

The important element of blast furnace scum are CaO (30-50%), SiO₂ (28-38%), Al₂O₃ (8-24%), and MgO (1-18%). On increasing the CaO content of the slag compressive strength is increased. The MgO and Al₂O₃ content show the similar trend up to respectively 10-12% and 14%, beyond which no further improvement can be obtained. This chemical composition is nearer to the chemical composition of cement that because it can be used as a binder material and also used in concrete by replacing the by weight of cement.

Tests on GGBS

Standard consistency- The motive of this experiment figure out the water contents demanded to produce a GGBS standard consistency paste.

Accoutrements - vicat Accoutrement, "Mixing trowel conforming the requirement of IS: 10086-1982".

Procedure: -

- Weight approximately 400mg of GGBS and mix it with a weighed quantity of water, i.e- 10% to 25% % weight of GGBS. The time of mixing should vary between 5 to 7 minutes.
- Brim the vicat's mould with paste and level it with the help of trowel.
- Loser the plunger smoothly till it hold the GGBS surface.
- Uncork the plunger and permit it to penetrate into the paste.
- Note the interpretation on the guage.
- Repeat the above procedure taking fresh samples of GGBS and different quantities of water until the reading on the guage is 5 to 7 mm.

Observations and calculations:

Weight of GGBS taken = 400 g

Quantity of water added to cement = 60 ml or g

Standard Consistency = (Quantity of water 5-7 mm penetration / weight of cement) * 100
= (60/400)100 = 15%

Initial percentage of water added to GGBS – 15%

“Earliest and final setting time”

Aim: To calculate the earliest and final setting time.

Accountments - vicat's **Accountments**, Mixing trowel meeting the requirement of “IS: 10086-1982”.

Procedure:

- Groom a GGBS paste by mixing the GGBS owing to 0.875 time of water demanded for making a “standard consistent paste”.
- “Threshold a stop-watch at the instance at which water is added to the GGBS”.
- The properly mixed cement mortar is filled in the mould completely, the mould is resting on a plate which is non porous and smooth plate making a level with the top of the model.

Observations and calculations:

“Weight of GGBS taken = 400 g”

Quantity of water added to GGBS = 0.875 * Quantity of water required for standard consistency.

$$= 0.875 * 60 = 52.5g$$

Result:

“Initial setting time: 115 minutes”

“Final setting time: 11.5 hours”

Fineness-

Aim: Determine the fineness of GGBS by dry sieving.

Accountments: Ninety µm IS Sieve, Balance capable of deliberation of ten g to the closet ten mg, A pure bristle brush, ideally with 25 to 40 mm.

Procedure:

- GGBS sample of about 100 gm was taken and represented by w 1.
- Put the sample on “I.S sieve no. 9”
- Air set lump in the sample was remove with the help of fingers.
- Sieving was done by the both the hands and sieves with usually rise without sipping the GGBS and keeping GGBS will spread on the screen carried out circular motion of sieve of the period for 15 min.
- The residual left on the sieve was limp and weight of residual is represented as w2

Result: “the percentage of residual GGBS sample by dry sieve 3.63 % it has less than 10% by weight.”

Test on Aggregates-

Specific gravity of coarse aggregate

Aim: The motive of this experiment is to figure out the specific gravity of coarse aggregate passing 4.74 mm IS sieve by pycnometer.

Material & equipment:

Pycnometer of about 900ml capacity, with a conical brass cap and screwed at it top, De-aired, distilled water, Glass rod

Procedure:

- Pycnometer is cleaned and dried properly. Figure out the pycnometer mass (M1).
- Oven-dried coarse aggregate of weight 200 to 400 gm and keep it in the pycnometer, calculate the mass of the pycnometer plus soil (M2)
- Fill the pycnometer to half of its height with distilled water and blend it thoroughly with glass rod. Add more water and stir it. Replace the screw top and fill the pycnometer flush with hole in the conical cap. Dry the pycnometer from outside, and find the mass (M3).
- Empty the pycnometer, clean it and fill it distilled water to the hole of the conical cap and find the mass (M4).

➤ Calculations:

The specific gravity (G) is calculated by

$$"G = (M2-M1) / (M2-M1)-(M3-M4)" = (919-652) / (919-652) - (1641 - 1473)$$

$$G=2.67$$

Calculations:

$$G= (881-652) / (881-652) - (1614 - 1474)$$

$$G= 2.58$$

Results:

"Specific gravity of fine aggregate = 2.58"

"Specific gravity of coarse aggregate = 2.6"

"Sieve analysis"-

- The particle size distribution of coarse aggregate and fine aggregate can be figure out by using the sieve analysis. This can be achieved by sieving the aggregate as per IS: 2386 (PART 1) – 1963. In this experiment we have a tendency to "use different sieves as standardized by the IS code and then pass aggregate through them and so collect different sized particles left over different sieves."
- A set of IS sieve of size _- 80mm,63mm, 50mm,40mm,31.5mm,25mm,20mm, 16mm,12.5mm,10mm,6.3mm,4.75mm,3.35mm,2.36mm,1.18mm,600µm,300 µm,150 µm and 75 µm.
- Balance or scale with an accuracy to measure 0.1 percent of the weight of the test sample.s

Sieve analysis for coarse aggregate-

Analysis of particle using sieve is done for determining the size of particles in coarse aggregate

Aim: To determine the particle size distribution

Apparatus used:

A brood of IS sieve of size – 40mm, 20mm, 16mm, 10mm, 4.5mm, 2.36mm.

Preceding

- "Dried the test sample up to a constant weight at a temperature of 110 +5 degree centigrade and weighted"
- Sieve the sample.
- Weight the sample of the material retained on each sieve after completion of sieving.
- "Cumulative weight passing through each sieve is calculated as a percentage of total sample weight"

Observation;

Total weight of coarse aggregate = 2000 gm

Sieve analysis for the fine aggregate:

Aggregate gradation (sieve analysis) is the distribution of particle size as present of the total dry weight. gradation is determined by passing material through a series of sieves lined up progressively smaller opening from top to bottom and weighting the material retained on each sieve.

Aim: "To adjudicate the particle size distribution of fine aggregate".

Apparatus used:

set of "IS sieves" of size – 10 mm, 4.75 mm, 2.36 mm, 600 μ m, 300 μ m, 150 μ m, 75 μ m.

Preceding:

- "The test sample is dried to a constant weight at a temperature of 110 ± 5 °C and weighted."
- "The sample is sieved by using a set of IS sieves."
- "On completion of sieving, the material on each sieve is weighted."
- "Cumulative weight passing through each sieve is calculated as percentage of total weight."

Observation: Total weight of fine aggregate = 2000 gm

Preceding to adjudicate the distribution of particle size of aggregate:

- "The test sample is dried to a constant weight at a temperature of 110 ± 5 degree centigrade and weighted.
- The sample is sieved by using a set of IS sieves.
- On completion of sieving, the material on each sieve is weighted.
- Cumulative weight passing through each sieve is calculated as percentage of total weight.
- Fineness modulus is obtained by adding cumulative % of aggregates retained on each sieve and dividing the sum by 100."

Water absorption coarse aggregate-

This experiment gives aid to adjudicate the absorption of coarse aggregate as per "IS: 2386 (Part 3)-1963". For this check a sample should not less than 2000g ought to be used. The apparatus used for this test are -

"Wire basket – perforated, electroplated or plastic coated with wire hangers for suspending it from the balance, Water –tight container for suspending the basket, Dry soft absorbent cloth – 75 cm x 45cm (2 nos), shallow tray of minimum 650 sq.cm area, air-tight container of a capacity similar to the basket and oven."

Procedure:

- The sample should be thoroughly washed to remove finer particle and dust, drained and then placed in the wire and immersed in water at a temperature between 22 to 32 °C.
- After immersion, the entrapped air should be removed by lifting the basket and allowing it to drop 25 time in 20 second .the basket and sample should remain immersed for a amount of more than twenty four hours afterwards .
- The basket and aggregate should than be removed from the water, allow to drain for a few minutes, after which the aggregate should be gently emptied from the basket on to one of the dry cloth when they would remove no further moisture. The should be spread on the second cloths and exposed to the atmosphere away from direct sun light till it appear to be completely surface dry. They should be weighted (weight A).

- The aggregate should then place in an oven at a temperature of 100 to 110 °C for 24 hrs. It should than be removed from the oven, cooled and weighted. (Weight B).

Formula used in water absorption = $[(A - B)/B] \times 100\%$

Two such test should be done and mean result should be repoted.

For performing this experiment the amount of sample should not be less than 2000gm.

Calculation:

A=3200gm

B=3182 gm

Water absorption = $[(3200-3182)/3182] \times 100$
=0.53

Result = 0.53

Fineness modulus of coarse aggregate-

Procedure:

“Fineness modulus is obtained by adding cumulative proportion of fine aggregates retained on every sieve and dividing the sum by hundred.”

Calculation

Fineness modulus= sum of cumulative % Wt retained (table 7) /100
= 385.3/100
= 3.85

Result: = 3.85

Conclusion-

Based on the results of this study, the following conclusions are drawn-

- a) Due to industrialization, large quantities of granite sludge and GGBS are produced and vandalism is produced. To reduce the cost of construction of these wastes which threaten the environment, the structure can be effectively incorporated in the concrete to make the structure more sustainable.
- b) Increased percentage of granite sludge and GGBS waste reduces compression strength of concrete.
- c) It is seen that the density is directly proportional to the force, as the increase of the density increases, the strength increases, as the density decreases, the strength also decreases.
- d) To calculate the earliest and final sating time is- “Initial setting time: 115 minutes” and “Final setting time: 11.5 hours”
- e) The fineness of GGBS by dry sieving is “the percentage of residual GGBS sample by dry sieve 3.63 % it has less than 10% by weight.”
- f) The motive of this experiment is to figure out the specific gravity of coarse aggregate passing 4.74 mm IS sieve by pycnometer. “Specific gravity of fine aggregate = 2.58” and “Specific gravity of coarse aggregate = 2.6”
- g) Water absorption coarse aggregate is 0.53.
- h) Fineness modulus of coarse aggregate is 3.85.

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FINANCIAL INCLUSION AND DEVELOPMENT IN ORDER TO DEVELOP SUITABLE MARKETING STRATEGIES IN INDIA

Mr. Mukesh Kumar Sharma
Principial at Chaudhary Central Convent School, Bhind

Abstract-

According to Global Findx (2014 statistics), two billion people in the world do not use formal financial services Besides, seventy five percent are poor people Bank, out of which forty percent are from the poorest homes in developing countries. Women in developing countries are less than twenty percent of men deposits account and seventeen percent less likely to borrow from formal financial institution the costs of account, distance travel, infrastructure facilities, and the opening of the account are often seen in some reasons. Government of India has created an ambitious strategy for financial inclusion as part of its development plan with the support of the technology-enabled branchless banking has been successful in expanding the drive about 60 percent of Indian population in terms of banking. However, some evidence suggests that most bank accounts are not being used or not access, especially not by the poor, are the goals of financial inclusion. Like this, the researcher is interested in examining the causes of such low use formal financial services are also willing to measure researcher financial the ability of the persons with the given respondents. Most Indian homes lack access to basic formal financial services. It leaves large part of India's high personal savings have been invested in physical assets and a large part of its borrowing went into the informal credit market. Formal saving generally cheaper and more easily available accounts are expected to be more and more savings accounts utilize more savings. Thus, the researcher is to know whether or not interested in the cost of formal savings transaction costs these costs help explain the less use of financial services. With the identification of the reasons for the use of formal financial services, financial capability and cost of transaction of financial services; Interested by researcher suggest marketing strategies for financial products to increase financial inclusion in India.

Keywords- Financial inclusion in india, overveiw, its importance, marketing strategies etc.

Introduction-

As defined by the United Nations, financial inclusion is a financial sector that provides access to savings and payment services to all the bankable people and firms and loans for all. It is not necessary for the inclusive finance that every person is eligible to use every services, but should be able to choose them if desired. 'Money transfer and insurance to poor and low income families and their micro enterprises.' Dr. C. The Committee on Financial Inclusion under the chairmanship of Rangarajan has defined financial inclusion as the process of ensuring access to financial services and timely and adequate credit where weaker sections such as weaker groups and the need for low-income groups at an affordable cost.

However, Dr. Raghuram ji Under the chairmanship of Rajan, the committee on financial reforms, widely defined financial inclusion as a financial universal access to a wide range of financial services at a reasonable price. These include not only banking products, but other financial services like insurance and equity products. Financial inclusion is a basic

requirement of the Government of India. The goal of financial inclusion in India is to draw financial services adequately to open their own growth potential, unless there is no service population. In addition, target efforts towards greater widespread development by accessing funding especially to the poor.

Financial inclusion in India has become a cliché although people are still untouched by unprecedented initiatives. There is apathy towards the implementation of financial inclusion for the sole reason that nobody is aware of the ideal path. It is fundamental to know that the objectives behind the population are adequate to be economically taboo. There are 203 million households in India, out of which 147 million are in rural areas. In this vast piece of population, only three types of financial items, direct credit offices, required sprawling records or a settled store, and entry to safety. Only 48 percent of India's population is enrolled in these basic financial services, 59 percent in Sri Lanka and 63 percent in Korea. The poorer meeting spends the highest level of salary on nutrition for about 60 to 90 percent. Any reduction in earnings or additional expenditure is an immediate result on family welfare.

Poverty is more than the absence of cash only. This includes lack of access to resources and means through which poor can increase their life. To avoid the formal financial structure has been reputed as one of the obstacles in the world without progressively destruction. In many developing countries, the financial institution does not have a large share of family units. This avoidance does not really mean that poor people need dynamic financial life: if told, in reality, the delicacy of their situation has led to the improvement of advanced casual financial instruments.

The use of only contingent means means that the poor are bound by their ability, reimburse the responsibilities, and maintain the trust in the risk of reliably. At macroeconomic level, this financial inevitability on the poor can reduce monetary growth and fuel imbalance. Finding creative models to provide financial services to the poor has now changed into an earnest examination. Therefore, this study is expected to facilitate marketing strategies for financial products to highlight and enhance specific aspects of financial inclusion.

Importance of Financial Inclusion in India

In India, policy makers are basically focusing on the financial inclusion of rural and semi-rural areas for the needs of three most important pressures:

- a) To build a platform for habit to save money: Emphasis of low wages is basically living under a consistent shadow of financial weight in view of non-arrangement of investment funds.
- b) To provide formal loan assistance: Generally unaffiliated persons need to rely on casual channels of credit in the form of helplessly as family, companions and moneylenders. Access to sufficient and simple credit to formally manage an account channels can lead to a sense of public entrepreneurship to grow and flourish in India.
- c) To prevent interruptions and leaks in public subsidies and welfare programs: A generous measure of schematic cash for the poor people does not actually contact them. Although this property gives the air through adequate arrangements of the government organization, it is widely accepted for release and can not receive the requisite meetings. Accordingly, the government is pushing for the exchange of direct

money for the distribution of its money, but is financing the goods and is paying the money.

Literature review-

Franklin Allen, Real Demerk-Family, Liora Clapper and Maria Soled Martinez Periya (2016) defined financial inclusion as 'use of formal accounts-can bring many benefits to individuals'. The authors examine individual and nation characteristics related to financial inclusion. Among the systems which are powerful are prohibited: poor, pastoral, women or young people Manufacturers find that financial inclusion is associated with less account costs, more prominent proximity to financial middle people, more frozen legal rights, and more politically stable situations. As it may be, the creators recommend the achievement of strategies to include advance, it is believed that it depends on the quality of the people.

Regarding measuring financial inclusions around the world from the Global Deluxe Database 2014, the Real Demirigu-Véron, Leora F. Clapper, Dorothea Singer and Peter van Odysse (2015) presented important comments. The database showed that 62 percent of the world's adults account with a bank or some type of financial institution or with mobile money providers. Apart from this, information shows that Colossal Open Doors remain to increase financial inclusion among women and poor people. As indicated by the database, governments and private parties can consider increasing the wages to be an important part and the government goes into accounts with money. There are also large scopes for promoting greater access to accounts, which allow those who already have the most to benefit fully from financial inclusion.

Diego Anzoategui, Asli Demirgüç-Kunt and María Soledad Martínez Pería (2014), examined the effect of the dispatch on financial inclusion. The study examined the effect of the settlement of families on the use of investment funds and credit instruments from the formal financial foundation. The findings of the study have shown that even though remittances have a positive impact on financial inclusion by encouraging the use of deposit accounts, but they do not have a significant and strong impact on demand and utilization of loans from formal institutions.

Asli Demirukk-Kara, Liora Clapper and Douglas Randall (2014) discovered the use and demand of formal financial services among self-identified Muslim adults. The findings of the review revealed that after formalizing the Muslims as a whole more personal and national-level properties than non-Muslims, there is a formal record or extra space in a formal financial organization. However, there is no indication from the investigation that investigation is more inappropriate than Muslim non-Muslims for formal or incidental reports.

Jayati Ghosh (2013), reviewed the literature based on microfinance in Andhra Pradesh in India and examined the microfinance crisis. It has been estimated in the review that microfinance can not be seen as a recession of the silver to improve and microfinance institutions with profit-making systems are risky. Apart from this, the study has suggested the need for regulatory measures and other strategies for the viable financial inclusion of the poor.

Working Paper by Adele Atkinson and Flore-Anne Messi (2013), titled 'Promote Financial Inclusion through Financial Education', showed that low levels of financial inclusion are linked to low levels of financial literacy. Based on the review of the approach, the challenges and solutions faced in the study were highlighted, and the possible ways were discussed.

C. Paramasivan and V. Ganeshkumar (2013) has presented an overview of financial inclusion in India. According to the study, proper mechanisms with resources will promote inclusive growth. Studies have shown that financial inclusion, which is an innovative concept, will promote the banking habits of rural people in India.

Terry Friedline (2012), examined the role of parents in saving financial benefits and opportunities for financial inclusion. The findings of the study showed that savings for parents of their children are important in low-to-middle and high-income household types. It has been suggested in the study that the purpose of inclusion of children in savings can help in reducing the transfer of financial benefits.

Marcus Taylor (2012) studied the problems which underline / exclude and underline the duplication of formal / informal finance. The study had major contradictions within the means of commercial microfinance discourses and practices. Apart from this, its correlated perception of inadequacy of financial inclusion and smooth consumption of smooth in the study was demonstrated. '

Mandira Sarma (2012), has attempted to fill the comprehensive measurement literature gap which can be used to measure the extent of financial inclusion in economies by using the index of financial inclusion (IFI). According to the author, the proposed index satisfies the mathematical properties and it is easy to calculate and is comparable to the countries over time.

Michael U. Klein and Colin Mayer (2011) examined mobile banking and financial inclusion from a regulatory perspective. In this letter, the competing policy and inter-subject issues were discussed. The findings of the study showed that mobile banking provides important lessons for the purpose of financial regulation, which usually develops alongside developed economies.

Marketing Strategies to Enhance Financial Inclusion

To succeed in the mission of financial inclusion, a strategy is needed. To face the challenges related to financial inclusion, one needs to engage themselves in planning and implementing strategic orientation and marketing strategies. Today, innovation is the key to creating an opportunity and achieving the goal of financial inclusion. Based on the findings of primary and secondary data analysis and study, the researcher is following marketing strategies to increase financial inclusion in India.

Understanding Market

In fact, changes in demographic and lifestyle in the country are introducing new opportunities for financial inclusion. Strategic perspective of efficient analysis is essential for

understanding socio-economic classification and changes in demographic profile of individuals.

Finding Niches

Prices, services, facilities and techniques are some that need to be searched and used in the right direction to meet the target of financial inclusion by banks. Today, these niches are becoming more and more expedient. Today, technology can achieve large-scale adaptation that can benefit the economies of top marketing and scale. Apart from this, banks and other financial service providers have to design products and distribution mechanisms which are more viable and are in line with the financial requirements of the Unbank in rural areas.

Portable Banking Services

Banks should think about developing and promoting portable banking services in different areas of India, which can be limited to cash deposits and services on a weekly basis. In such a case, the bank does not need to invest in large infrastructure to meet the needs of such areas. In addition, customers will be able to save transportation and other contingencies because they will be getting services at their doors.

Product Planning

Financial inclusion involves the use of important financial services such as bank account, insurance, etc. It is important to understand the perception of these formal financial services and the perceptions of those areas in which the person is dissatisfied with formal financial services and non-formal / traditional financial services. It also involves analyzing the situation in which the person uses financial services and if there is a situation which banks / government does not have information about. It will definitely help experts not only add value to formal financial services but also reinforce the value package for individuals with the aim of financial inclusion.

Segmentation

Segmentation is one of the basic elements of marketing strategy. It is advisable for experts that value-added marketing strategy should be used on the basis of segmental analysis and similar information should be used to develop novel formal financial services.

Mass Customization

Partition strategies will give experts the option to standardize specific formal financial services and separate them from non-formal / traditional financial services. With the help of technology, researchers are suggesting individuals to design a marketing mix in accordance with the needs of individuals for formal financial services.

Targeting Strategy

Banks should see Millennial / Generation Y and Generation Z as their main goals for formal financial services. They are those who are 30 or less and can become long term operators of formal financial services throughout the life.

Value Addition

Banks should be allowed to use their key resources like knowledge and relationship to reconfigure their roles and relationships in the process of creation of value for financial inclusion. In addition, experts should maintain value building in the form of continuous process for knowledge of formal financial services and better fit among new customers involved.

Customer Relationship Management

Financial institutions should make the right mix of technology, people and processes with the aim of customer loyalty for formal financial services. This will help financial institutions to use the services of people repeatedly and encourage their confidence in processes.

Experience Creation

Banks should take initiative to create anesthetic experience by creating the right environment which will encourage individuals to participate in various activities to understand the many formal financial services available to them.

Customer Value Management

Not all people are equal and they do not need the same level of financial services. The development of the management information system can help financial institutions understand the proposals for new proposals and formal financial services proposals.

Ease of Opening an Account and Facility to Hold Ad-hoc Bank Account

In the current study, it has been noted that it takes at least 5 days to open new accounts. This delay can cause any negative impact on the account holder's mind. It has been suggested to accelerate the process and bring it down to one or two days. It will be necessary to collect necessary documents from the potential account holder within the shortest possible time. This is one of the methods to reduce the time limit, opening of new accounts on the basis of ad-hoc in the absence of some documents, and facilitating the account holder to submit remaining documents in extended period. Customers should be allowed to operate their accounts during this time with a specific time limit. They should also be made aware that their account will not be operated after the time limit of compliance.

Incentive Program

Financial institutions should offer incentives for socio-economically backward people when they open a bank account. These incentives should be directly deposited in their bank accounts and they should not be allowed to withdraw this amount till the account holder uses the account for certain transactions.

Bank Account Utility

Providing some benefits like various subsidies, the Government should route them with nationalized or commercial banks with this condition that the beneficiary's bank account should be operated for at least the last 8-10 transactions for other purposes. needed. Such bank accounts should not be operated only to get subsidy and to keep these accounts inactive till the next subsidy. In a way, this strategy will also compel account holders to deal with other reasons.

Debit Cards

Soon after opening the account, the bank should arrange for a debit card to the account holders with a confidential PIN. Account holders will be able to operate accounts without losing time. It is recommended that no fee for such a debit card be charged to the customer. In contrast, these customers should be given some incentives per transaction. This will motivate a large number of new customers to take advantage of such schemes. It will also facilitate cashless transactions and reduce the risk of carrying cash.

Statement of Account

The periodic details of the account should be sent to the account holders without demand from them. Such statements can be sent through the mobile network. This will help the account holder keep the updates of the transaction, and this will result in a God-deal of confidence in the customers about the banks.

E-deposits

Account holders should be encouraged for electronic deposit through mobile banking, bank app or net banking. This will help reduce the bank's visits to account holders and reduce indirect transaction costs.

E-payments

Electronic payments should be encouraged by financial institutions with proper education among account holders. It will help individuals build trust in formal financial services.

Inexpensive Investment Plans

As the socio-economic backward class income is low and there is a habit of overspending, they fail to save anything bigger. However, financial institutions should come up with the schemes where the person can start investing with a great return (15 to 20 percent per annum) for a short period (15 to 20 years) per month (Rs 100 to 500) Are.

Long Term Loan Facility

Banks can provide long term long-term facilities for eligible candidates without interest. A plan should be developed in such a way that these students can repay their loans in a flexible way to get employment.

No-Fee Program

Banks should be encouraged to open an account with schemes like the skip-in-charge program, courtesy payment, etc. These schemes will definitely help the socioeconomically backward class to open and use bank accounts.

Periodic Campaigns

It has also been suggested that the bank should appoint some personnel to go to different places and arrange campaigns from time to time to open accounts of new members. Whenever more than two persons are found eligible to be account holders in a family, then the bank should allow all the members of the same family to open accounts on a single set of

documents. It will save family members' efforts to compile multiple copies of the same document.

Counseling Services

The bank should try to provide free consulting services as a part of the promotion. This will create opportunities for banks to tap potential market. Needy customer

Personal Selling and Cross Selling

Banks can promote insurance and other products related to investment within a new customer's network using personal sales skills. Increase the money advice services for all individuals, with a variety of focus on families with different demographic characteristics.

Financial Education

With various banking assistance, government institutions should increase the continuity of financial education in all the teaching environments in different rural areas targeting the targets of all age groups and who teach them and teach them.

Product Literature

Financial service literature should be simple and well illustrated. In addition to attracting the public, it should be published in the local language.

Financial Capability Interventions

Financial capacity intervention in rural areas of India has been evaluated in such a way that we can make a benchmark and compare interference and can identify its functions well. It should be designed to increase opportunities and share the education of interventions, which can help people create financial flexibility.

Findings of the study-

Respondents of 20 to 30 age group were up to 16 percent; While about 44 percent of respondents were falling in the age group 41 and above. A group of 20 to 30 years of age is a group of youth who has many aspirations in life and they are capable of saving some amount for future purposes.

87 percent of respondents were male while 13 percent were women. Men in the family are the key elements for earning income in village areas, and women see home and allied activities.

About 94 percent of the respondents were married and the responsibility was after marriage. Only 6 percent were unmarried respondents.

75 percent of the total respondents were employed in some organizations and were earning through this medium. Self-employed up to 7 percent and the same number of respondents were also unemployed. There were no practical income sources of 5 per respondents. About 3 per respondents were only looking after the work of the house, which had no income. Approximately 2.4 percent of respondents were in the category of retired persons.

As with regard to educational qualification of respondents, 56 percent had completed their higher secondary education or below this level. 23 percent did not receive formal education with literacy; While 20 per university degree was achieved.

Researchers wanted to understand the family structure of respondents in relation to the number of male and female members living in families. Statistics show that in most of the houses, there were 4 male / female members. It also means that the houses where the respondents lived in were almost one type of nuclear family.

It was noted from the collected data that all respondents had savings accounts in different types of banks. 53 percent of respondents had their savings accounts with nationalized banks, while 42.6 per respondents had their savings accounts in rural / regional rural banks. Only some respondents had their savings bank accounts with private / foreign type banks.

The researcher was interested in knowing the frequency of operating his savings accounts. It is believed that while conducting any account in the bank, a person usually visits banks for the purpose of transactions. Therefore it was decided to ascertain how many times the respondents visited the bank premises in a period of 3 months. Data showed that 40% of the total respondents had visited their respective banks at least 3 times in a 3 month period for some transactions. 18 percent found that visiting their banks four times in a three-month period. 16 percent of respondents had visited their banks six times in the said period. During the 3-month period, approximately 14 percent of respondents visited banks almost twice.

The researcher thought of finding any relation between the types of accounts created by these respondents and the types of banks. On analyzing the data, it was specifically noted that there was no relation to the type of bank and the purpose for which the account was opened by these respondents. In other words, the objective was fulfilled despite the type of bank.

The researcher tried to ascertain that the number of visits of these respondents had some relation with the banks they were choosing to deal with. It was noted that the type of banks has no relation with the number of visits that the respondents had to do to open the account. Whether it is nationalized bank, or rural / rural regional bank or even private one, there was no relation to the number of visits.

Cash withdrawal is one of the most frequent activities while operating a savings bank account in any bank. In rural areas, people like to go to the bank individually and take cash according to their needs. It was found that, despite the type of bank, the respondents used to withdraw cash from the ATM using the card, but the number of respondents doing so was found very little. For this purpose 755 out of 453 respondents were found. 210 respondents were using bank clearance slip to withdraw cash from their accounts. For this activity, the account holder must present himself / herself in the bank with the related passbook. Payment on the withdrawal slip is done only on these basis. 1 were6 respondents were found using cash to withdraw cash from their accounts. In this way, a large number of respondents preferred the mode of payment / withdrawal slip to withdraw money from banks. Again, the type of bank in this regard did not matter too much.

It was attempted to note that the respondents had a habit of lodging their day-to-day expenses on food and other items. Statistics showed that almost 71 percent of respondents did not have such a habit. Of course, 29 per cent of them were not paying attention to these expenses on a regular basis.

During the current study, efforts were made to understand the different types of personality related to the use of financial discipline, learning habits and information received from various sources. Approximately 41 percent of the total respondents firmly agreed that when they come into financial matters, they consider themselves to be the most disciplined person. Approximately 24 percent believe that they were highly disciplined 24 percent of the total respondents admitted that they were not so disciplined in financial matters and the remaining 8 percent were completely non-disciplined personality.

Conclusion-

The present study has been directed to achieve four key objectives. Given the fact that formal financial services have been outlined in India, the researchers were eager to examine the various reasons for that. It has been specifically noted that the number of people living in rural areas is weak in their socio-economic background. Despite the fact that the latest technology is being used for the wider spread of financial services across the county, urban areas seem to have more privileges of its benefits. In the expansion of financial services across the nation, major players will have to focus primarily on those profit margins which are more than urban background. Most of the rural areas of the country are neglected by these financial institutions relatively profitably because of such areas. As a result of this trend, the deprived part of the socio-economic background in rural areas is either untouched or is being served without any seriousness.

Although India is progressing towards establishing infrastructure since its independence, rural areas still have the benefit of such infrastructure. Building infrastructure is primarily the work of government, local bodies and financial institutions in the country. Unfortunately due to lack of concentration in rural areas, the infrastructure problem is still facing a serious problem. The rural population is not able to construct such infrastructure that will solve their financial problems. These are the major reasons for which a large part of the poor population in rural areas is found to be financially excluded. There is a dire need to bring them to the lowest level of financial inclusion. They also need to help them to understand and understand the importance of financial inclusion in their lives. It is largely possible to bring them in regular steam of financial inclusion and the results will be most encouraging for the national economy.

In this regard, it was found necessary to measure the financial capabilities of the people living in rural areas. The major income source for such areas is from agricultural produce. However, most people like to migrate to the nearest cities to earn their livelihood. This reduces the ability of households to use financial resources. Apart from this, financial products offered by various institutions have their own limitations. Most of them are ready to target the urban population. People living in rural areas do not find such products useful to them because they do not match their needs. The complexity involved in financial products

keeps these individuals away from using them freely. It is necessary to develop suitable financial products that match the needs and desires of the rural population.

It is true that some of the costs have to be raised to take advantage of financial products. If more people are financially involved then they are bound to certain costs. Many times it has been seen that some people open bank accounts for government subsidy and wherever applicable, for subsidies. After obtaining such benefits and crossing the transaction, such accounts are terminated, their purpose ends. In fact, there is every chance for them to use these accounts to plan their financial needs. It is therefore necessary that they should be given the importance of staying in the financial stream which can affect their lives and can teach them to survive in difficult times. The concerned financial institutions and the government can formulate a policy to reduce the cost of availing financial services in the disadvantaged areas. In the end, it should be seen that the mere cost of availing financial services should not be an obstacle to the use of services.

It is true that most people are not aware of the importance of managing their day-to-day finances. Only the low income balance can not be the reason for being financially excluded. A proper training can make wonders if it is taken seriously. However, such training should be provided to the disadvantaged people by local bodies because they know more about the problems of such persons. Other financial institutions can also support their local bodies wherever possible. Persons who have been celebrated to succeed on financial inclusion can be used as role models to motivate local counterparts.

It has been noted through primary and secondary data that the persons who have not yet been brought in financial inclusion have different perspectives. They give more importance to their present existence than their future. This is because their earnings are comparatively very low and they try to find ways and methods to meet their current needs. Circumstances do not allow them to think about their future. They need to reassure that their future can be better if they think about planning their finances properly. To see their future, they need to change their attitude. Their changing attitude can help them think optimistic, which can bring them to the primary stage of financial inclusion.

During the last seventy years of independence, India has made tremendous progress in many areas. Commerce and Industry are making rapid progress in the urban parts of the nation. However, unemployment in rural areas is still a big problem in front of the government. As a result, there are several low-growth socio-economic groups that are still away from financial inclusion. The current study has attempted to ascertain the causes and challenges which are still deprived of financial services. Their inclusion in the national financial stream is particularly important for the equal social justice and economic viability of the nation.

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CRITICAL STUDY OF CUSTOMER RELATIONSHIP MANAGEMENT IN RETAIL BANKING

Mr. Mohd Faisal Afridi

Assistant Professor

Al Barkaat Institute of Management and Science, Aligarh

Abstract-

Indian banking industry is currently seeing an increase with innovative banking models like payments and small finance banks. In the year 2016 and 2017, there is hope to be the eleven payment bank launched Independently, about ten small finance banks are in the same way launch is estimated. Recent and new measures of RBI can go a long way. Help in the reconstruction of the domestic banking industry. Market size of Indian banking industry is such that includes 26 public sector banks, 25 private sector banks, 43 foreign banks, 56 regional rural banks, 1,589 Urban Co-operative Bank and 93,550 Rural Co-operative Banks other Financial Institutions. Then, the public sector banks have occupied approximately 80 percent of the market, excluding relatively small shares private player each bank tries to acquire and hold private or public develop your customer base, and extend your profits by expanding them market share. Helps banks in customer relationship management activities making relationships through effective negotiation in each of their stages frequent purchase. The purpose of this paper is to critically analyze the relationship shared among the effectiveness of banks and customers and activities adopted by these banks. This important study of CRM in retail banking in the state of UP, provided an understanding of quality of service and various CRM activities followed by retail banks, and factors whose quality affected service for a satisfied customer and various CRM activities.

Keywords: *Public sector banks, private sector banks, customer relationship management, banking, service quality, Indian banking system.*

Introduction-

Mohandas Karamchand Gandhi said, "In senses or inadvertently, every one of us offers some service. If we add habit deliberately doing this service will increase the desire for our service strong, and this will not only make our own happiness, but also in the world huge ". So the role of customer service and the creation of a permanent customer relationship not only gave importance to the development of business community, but also society as a whole. Understand how customers felt about the organization and competed on the basis of relationship and not alone on binding with a competitive product or fair price actual differential for any business was this study is an attempt to find out how the banks performed in this regard and whether the customer was satisfied or not quality of service and customer relationship provided by these banks construction of practices adopted in the state of UP India's emerging market is facing many challenges. Loosened economic status, Reduction of rupees, various consumer segments and many players are cutting each piece while trying to rebel work in a cost-effective way. Apart from these fall factors, market scenario is also moving forward with the increase in consumer infidelity agility Sharp technical optimization is moving towards the needs of banks skillful in presenting better product solutions despite all of the above challenges, India is still prominently involved in future drivers of the world of the economy India holds an important place and it is only ahead of China. Its share of world's gross domestic product in emerging markets its trend consolidated in later years, in which

India has been given space third largest economy. The banking system has played an important role in the creation of such sound and healthy economy which is prevalent in India. The main reason is to meet the debt needs of all sections of the banks reaching the metropolis and remote corners of the country.

Evolution of Banking in India

Banking originated from 2000 B.C. Babylonia, where temples and palaces were considered security of valuables in return, the receipt that was issued was ahead using these items to move to third parties. There were also laws governing such banking activities In these times, these receipts were used as currency notes, facility of transfer of funds from person to person, and for the place. Banking in India grew from the bank of merchants during the 18th century which was mainly engaged in financial activities presidency banks. These days the presidency bank was Bengal / Calcutta in 1809, Bank of Bombay and Bank of Madras in 1840, in 1843 He formed the Imperial Bank of India. Allahabad Bank. The first bank, established in 1865, was fully run by the Indians. Punjab National Bank Limited was established between 1894 and 1906 many banks like 1913, Bank of India, Central Bank of India, Bank of Baroda, Canara Bank, Indian Bank and Bank of Mysore were established. In 1921, all presidency banks were merged to make Imperial Bank of India, which was owned by European shareholders. In the end

1955, State Bank of India (SBI) constituted its ubiquitous Blue Disk to start the business of Imperial Bank under the SBI Act of 1955 of India Later, major conflicts came up during 1969 and 1980 when nationalization changed the face of banking in India with private ownership for public ownership. The next concrete step exposes another development story with the introduction of Indian financial and banking sector reforms. And partial liberation in the period 1990-2004. Liberalization after 2004, became a key base for private attacks and foreign banks are pushing forward and strengthening the competitive scenario. Along with providing financial literacy to millions of Indians in present, there is a diversified structure in the banking sector that comprises a large part. There is a small fraction of scheduled banks and non-scheduled banks.

The Present Indian Banking Scenario

An outline of the Indian Banking industry is as follows:

- 1) Reserve Bank of India
- 2) Indian Scheduled Commercial Banks
 - a) State Bank of India and its five subsidiaries
 - b) Twenty Nationalized Banks
 - c) Regional Rural Banks
 - d) Other Scheduled Commercial Banks
- 3) Foreign Banks
- 4) Non-Scheduled Indian Banks
- 5) Cooperative Banks

Literature Review-

On the contrary, some researchers denied that customer relationship anagement was an old school marketing idea and current marketing concepts like channels, services and direct were overlayed marketing; Thus, it did not require separate identification.

According to Baker, M. J. (1998) is believed that relationship marketing and direct marketing were synonymous and so seemed to be more relevant to business-to-business marketing and service marketing.

According to Berry, L. L. (1991), there should be an emotional bond between it service providers and service users need to maintain and increase relationship It made customer relationship management a one the concept is very important for implementing services in their business.

According to Farrell, J. (2001), relationship marketing was more comprehensive than a concept Customer Relationship Management.

According to Richards, K. A. (2008), customer relationship management better pricing strategies, processes involved in customized services, well-integrated supply chain and sales force development.

According to Day, G. (2000), customer relationship management strategy includes essential things there is a need to develop such capabilities that are competitively competitive strategy.

According to Ragins, E. J. & Greco, A. J. (2003), customer relationship management is a business strategy every customer interface is important and tries to assure in spite of the reliable communication channel selected.

According to Lochridge, S. (2001), customer relationship management is also a business strategy that is highly customer-focused and coordination between people, processes, and technologies is needed growth and gain higher profits.

According to Buskirk, B.D. & Lavik, M. (2004), operations involves operations in customer relationship management tech marketers use to identify and analyze customer behavior and processes to motivate and motivate a customer buying the organization's products and services.

According to Goldenberg, B.J. (2002), This is a comprehensive action that provides fully consistent and consistent coordination between all customer contact work.

According to Zeithaml, V. A. (2003), customer relationship management in the banking sector, churning is going on in the way the customers are contacted. Attracting new customers and maintaining existing ones is okay reviewed as banks are now experiencing the challenge of creating and maintaining customer loyalty Banks are now focusing more on control than ever before quality of the employees' participation with smoothing demand and supply cycle Attention is drawn to modern marketing, maintaining and developing customer relationships through quality service that happens only when they trust the bank.

According to Reinartz, W. K. (2004), research also revealed the opposite on customer relationships management which failed to do different organizations effectively and manage their client relationship management programs. Specially, organizations spend billions of dollars on customer relationship management, but apparently seventy percent of customer relationship management projects failed to get expected lower-line improvement in job operation.

According to Day, G. (2000), Morgan, N. A., Slotegraaf, R.J. & Vorhies, D. (2004) & Plakoyiannaki, E. & Tzokas, N. (2002), Some subject areas cause these organizations in such a way weaker because they were neglected to implement customer relations management resources they had to build better capabilities to do this, managing customer relationships and achieving competitive advantage.

According to Wang, Y. L. (2004), consumer price and another integrated framework for customer relationship management performance included four major dimensions

functional value, social value, emotional value and perceived sacrifice. Inspecting the results found, it proved that customer satisfaction, brand loyalty and functional value had a positive effect on customer behavior based on customer relationship management performance, where, brand loyalty was the most important influence on customer behavior.

According to Tokman, M. D. (2007), customer retrieval is referred to as 'Aadhaar Bank' in the reg customer retrieval improve service and revenue gains Banks determine the reason behind this customer switching and current relationship they bear with others the provider. After this, shaping social capital, service and value benefits are seen carefully in win-back offers and service value. Due to neglecting the degree of satisfaction with the past the bank receives any crisis or happy customer from the existing bank.

According to Kim, H, and Kim, Y. (2007), relationship termination is called de-marketing, including valuation to maintain profitability and profitability of customers and to eliminate profitless customers However, under the current banking scenario, it can be contribute adversely. The end of these non-profits customers can eventually be expensive due to their strategic network value and such action is not socially acceptable either.

Evaluation of Perception on Service Quality Dimensions-

I saw in this research that quality of service is a forerunner for the customer satisfaction to assess the effectiveness of customer service quality relationship with banks and finally at the level of their satisfaction is any important point in time . Clients' reactions are analyzed for their detection concepts on the quality of service are provided by their primary bank and

The following findings are:

Calculative descriptive results for the quality of service bank type was selected as its primary bank, this indicates between the five dimensions, respondents are considered to be tangible dimensions after the highest sympathy. Reliability and accountability dimensions are at almost the same level and dimension that is least valuable the assurance dimension is by the respondents.

The managerial implication from this search is that even though dimensions of service quality (tangency and sympathy) are positive respondents, credibility, accountability and assurance are considered by dimension the quality of service requires additional attention from the banks. to improve the overall service quality of the banks, they have to be adequately augmented. For this to happen, banks have to empowerly improve the level of knowledge staff. Courtesy of employees and their ability to deliver messages to customers confidence and confidence also have to be developed quite well. Likewise bank there is a need to expand their ability to trust the promised service, a true and persistent look shows a willingness to help them

Provide clients and prompt service.

Apart from the above, if any one is important, the study examined difference between the customer's demographic characteristics of the bank understanding the quality of service quality in retail banking. Show results between all demographic and financial characteristics, gender, marital the status and age profile of the respondents influences the different assumptions quality of service, while respondents did not have income categories impact the quality of service quality.

The managerial implication of this discovery is that the customers keep their differences assessment on expectations and assumptions in all five service quality dimensions. Age profile of gender, marital status and respondents service Quality

Dimensions Contrast Thus, banks need to be included while drafting of different services, aspects related to gender, marital status and age group. However, no change has been found in different assumptions the level of income means that the respondents fit all the income groups experience the quality of service in the same way without variance.

Through this study, it is also believed that the quality assumptions of service there is a variation in the type of bank selected as their primary bank. Therefore, banks need to work on all five dimensions but emphasize in order of their perceptions If the prohibition is to be observed banks need to engage these dimensions as a guide for re-assignment.

Evaluation of Perception on Dimensions of Customer Relationship Management-

Customer relationship management is the practice of management relationship with segments of diverse clients. Customers differ in their economic value and banks later optimize their offerings and communication strategy accordingly some organizations consider customer relationship management will be an additional investment especially in technology; However, other customer relationships are considered management for comprehensive development is more comprehensive and aggressively and rewarding relationships with customers. This study examined the customer relationship management at customer management level respondents rated different dimensions of customer relationship management in all contact channels of retail banking.

Contributes to the resulting search integrated and well-defined relationship marketing actions through individual banking work cognitive outcomes for customer relationships the formation of study on the type of management bank chosen in their form primary bank indicates respondents between five dimensions the perceived customer feedback and customer knowledge dimension, the highest among other customer relationship management dimensions after customer acquisition and customer information system.

The customer value evaluation dimension is least valuable by the respondents. This search has managerial implications, even if two customer relationship management dimension i.e. customer feedback and customer knowledge is considered positively by respondents. Nonetheless, customer acquisition, customer information system and customer value management client price rating dimensions banks need to pay extra attention. To improve overall perception customer relationship management of banks, these three dimensions are to be executed by mistake. This can be considered extending customer relationship management and adding traditional marketing techniques with relationship management activities which include customer acquisition, customer information system and customer focus value evaluation dimension banks need to emphasize customer acquisition dimensions customer relationship management to complete different measures customer's immediate needs and the ways to attract new ones in this way sections that use the customer's information in getting new customers doing therefore, banks will be able to meet and meet the specific needs of customers service commitment of banks It is in line with the above search it has been said in the study that the assurance dimension of quality of service is needed. Special concerns in banks as customer's dimension again, customer information system relationship management activity involves adopting new techniques communicate with customers.

This study shows that banks must identify customers need to simplify business behavior and implement core banking services. Banks will have to install modern equipment and technologies that allow customers to efficiently meet banking requirements customer value assessment as the dimension of customer relationship management activity includes

features related to trust and taking advantage of the services from banks, the feeling of fulfillment of customers since this factor is least valuable by the respondents in the study, therefore banks need it provide better services that attract customers to bank with them. In this way, the interval is solved by adding the required customer relationship management activities in the traditional marketing framework banks in addition to the above, if any was important, the study examined difference between the customer's demographic characteristics of the bank understanding the dimensions of customer relationship management in retail banking the results show that all demographic and financial characteristics affect only the notions of gender dimensions customer relationship management the managerial implication of this search is that the customer assessment on expectations and assumptions in all five dimensions customer relationship management remains same as gender profile.

Therefore, gender is the key to demographic profiles except gender no effect on how customers experience dimensions customer relationship management is leading this implication that, client concepts on customer relationship management between banks regardless of the status of age, marital and income, they are similar. A search in this context suggests that the assumptions on dimensions customer relationship management depends on the chosen primary bank. This means that the bank which they selected from SBI or its associates, the national banks, private banks of old generation and private banks of new generation one important effect is how they consider the dimensions of the customer relationship management in connection with customers.

Customer's Satisfaction on the Customer Relationship Management and the Service Quality in Retail Banking-

Customer satisfaction is fundamental in customer creation wishes for future purchases. Enhances customer relationship management customer satisfaction for profitability, ROI, and any organization to customer relationship management, an all-inclusive set of tools, technologies, and processes have to work to support that relationship. The customer satisfaction is a focal component in any successful customer relationship management implementation, leading to customer loyalty organization. The inherent importance of customer satisfaction is produced free advertising that gets installed therefore, it has become indispensable keep the customer in the center of any business with respect to your strategies. In the effect remains more profitable to maintain existing customers than searching it.

Descriptive results calculate for customer satisfaction level dimensions of service quality and customer relationship management the type of bank, which has been selected as its primary bank, indicates the level of satisfaction customer service quality is positive on dimensions and dimensions relationship management. Apart from the above, if any one is important, the study examined the difference between demographic and financial characteristics of bank customer and customer satisfaction level relationship management and service quality of banks. Show results none of the demographic and financial characteristics affect level of customer satisfaction the managerial implication is that if the primary bank is lacking the difference between the needs and requirements of the customers with the products services, it enhanced customer satisfaction.

However, in order keep customers happy, keep them up and protect your existing ones for banks the customer base, the banks have to invest in improving the dimensions of service quality and customer relationship management activity. Otherwise, banks the future of attacking the market can be weak for competition expected service quality and customer

relationship management through this study it is also known that the customer satisfaction was there is no difference in the type of bank selected as their primary bank.

The managerial implication is that the main products offered by all banks remained the same and the difference is in the way of obtaining products only through these different customers through and through different banking channels measures of various activities, meeting customer's expectations.

Integrated Service Quality-Customer Relationship-Satisfaction Model-

An integrated model finally developed has been tested in the study. The initial model was developed based on the review of various literature customer relationship management and service quality dimensions different organizations when the model is tested using the SEM tool, it is found it eventually took place as a customer after a three-stage process satisfaction platform service begins with affecting quality dimensions customer relationship management dimension, which is in two stages customer feedback, customer knowledge, and customer value evaluation the dimension of customer relationship management, for progress second acquisition of customer acquisition and customer information system customer relationship management dimensions finally, the model ends with a satisfied customer who found its effect from the customer feedback, customer value evaluation, customer acquisition and customer information system dimensions of customer relationship management this the model is tested using the structural equation modeling tool and the resultant removing modals such as links with modifications which are not important it emerges as follows:

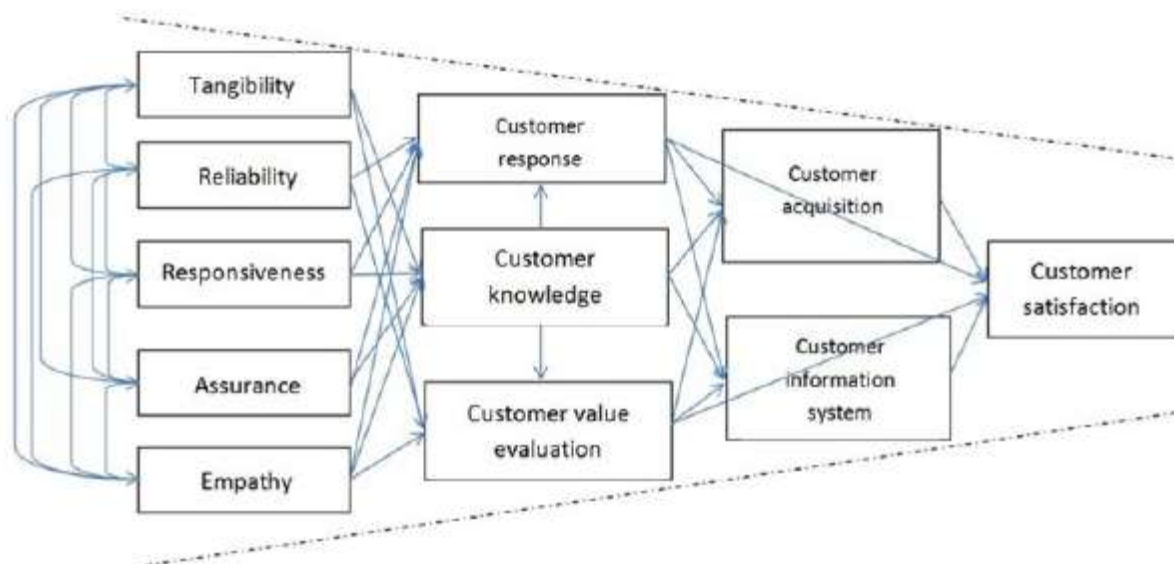


Figure 1: Integrated Service Quality-Customer Relationship-Satisfaction Model

The managerial implication of the model is such that it will help bank to regain customer relationship management and quality of service to achieve your business objectives. As it is believed in the model, the quality of service dimensions are placed at the top of the organizational perspective, as a result getting customer satisfaction All other dimensions of service quality customers influence three specific dimensions of management i.e. customer feedback, customer knowledge and customer value evaluation. Thus, banks should be aware of the fact that the quality of service dimensions directly influence the way customers experience customer feedback, customer knowledge and customer value evaluation, customer

relationship management dimensions. Table 1 shows that the effectiveness of service is on quality dimensions customer feedback, customer knowledge, and customer value evaluation the dimension of customer relationship management activity.

Table 9.2: Service Quality Dimension influencing the CRM

Service Quality dimension	Dimension of CRM activity
Tangibility - The bank has enough space sit and wait, the bank is clean and clean, bank employees are clean attendance, bank statements are clearly printed, and the bank has appropriate signals inside their branches provide direction service location.	Customer Knowledge - Hours of operation of the bank convenient for the customer, in clarity understanding the features of the products and services. Customer Value Evaluation – easy to understand the systems and processes.
Reliability – The bank adheres to its promises service quality and delivery, performs services are correct at first demanded by the customer, provides time of service promises to do this and the bank has accessible communication network and means.	Customer Response – Bank provides a variety of service items and information, bank fulfils its promises on time. Customer Knowledge - Offers a comprehensive range of investment products, offers innovative loan services. Customer Value Evaluation - Always delivers superior services, offers high quality services.
Responsiveness - Bank employee gives quick service, the behavior of bank employees increase confidence in the customer, there are employees of the bank regularly courteous with customers, bank employees pay personal attention the customer	Customer Response – Bank uses different measures to meet customers' urgent/specific requirements. Customer Knowledge - understands individual needs and circumstances of the customer, always meets expectations of the customer. Customer Value Evaluation - enjoy banking with the bank, services available at bank motivate the customer to use it more.
Assurance - Bank has amicable rankings staff, customers feel safe bank, Transaction with employees bank has knowledge of answering Customer's requests.	Customer Response - Bank employees are knowledgeable and the information required on request services, banks actively give total financial advice the solution for the customer, and the bank is capable of a wareness about your products and services to meet customer's needs. Customer Knowledge – Encourages introduction new customers for the purchase of products and bank services, better terms and conditions compared to other banks.
Empathy - Bank shows sincere interest employees of solving problems of customers banks are always ready to help, bank employees respond to customers' employees without requests for no delay the best interests of the customer in the bank the heart represents the front line staff of the bank proper guidance signal which indicates what services are the counters offering, bank employees feel special need.	Customer Response - Bank staff shows sincere interest in solving customer's problems. Customer Knowledge - encourages using bank's services and products. Customer Value Evaluation - relaxed using banking services, services at bank would help me to give a good reference to other people.

Moving forward, the second stage of the model demonstrates the effect three dimension of customer relationship management i.e. customer feedback, customer knowledge and customer value evaluation the remaining two dimensions i.e. customer acquisition and customer notification system it can be explained through the table below.

Table 2: Dimensions of CRM

Dimensions of CRM - Customer Response, Customer Knowledge and Customer Value Evaluation	Dimensions of CRM – Customer Acquisition, Customer Information System
<p>Customer Response - Bank uses different remedies to meet customers' needs requirements, bank offers a variety of services items and information, the bank fulfills its promises at times, is able to provide awareness about the bank customer's products and services to meet requirements, banks actively give total financial advice customer solution, bank employee knowledgeable and necessary information officers on requested services, bank employees show honesty interest in solving customer's problems.</p>	<p>Customer Acquisition - The bank system that makes it easy to do business with the customer bank, system followed by bank to fulfill customer banking needs. Customer Information System - The bank uses phone calls, e-mails and personal touring to communicate with the customer, the bank continually understands the service requirements and expectations the customer provides a series of bank credits features to the customer requirements, bank products that provides reflect the earnings and wealth of the customer, the bank provides enough information to allow while the customer has to be well informed to choose.</p>
<p>Customer Knowledge - Hours of operation of the bank convenient for the customer, the bank offers one investment products, broad range of bank provides new loan services, the bank understands of personal needs and circumstances customers, banks often encourage to introduce new customers for the purchase of products and bank services, banks often encourage you to use bank services and products, bank offers better terms and conditions compared to other banks, banks always meets customer's expectations.</p>	<p>Customer Acquisition - Bank has implemented core banking solutions, bank maintains record of purchases and services of each customer. Customer Information System - Fast bank answers to problems, tips and customer's complaints, bank continuously understands the service requirements and customer expectations, and bank offers convenient services.</p>
<p>Customer Value Evaluation – Always bank provides better services, offers high quality enjoy banking with services, banks, services customers available in the bank inspire to use it plus, feel comfortable using banking services, help in providing good services to the bank references for others.</p>	<p>Customer Acquisition - The bank has modern equipment and technology, bank provides tele banking and Internet banking facilities, ATM machines are available in most places. Customer information services – Bank offers useful online products and services.</p>

Finally the model shows the satisfaction of affected customers relationship management dimension i.e. customer feedback, customer value evaluation, customer acquisition and customer notification system the managerial implication is that the banks will have to recognize that customers are satisfied if they are responded with the necessary requirements and services (customer feedback), better services (customer value evaluation) using modern technologies, new needs of customers or new ones customers are acquired with specific requirements (customer acquisition) and finally, with active measures, the service requirements customer (Customer Information System).

Conclusion-

This important study of customer relationship management in retail provides an understanding of the quality of banking in the state of UP service and various customer relationship management activities adopted by retail banks factors that affect quality of service and various client relationship management activities lead to a satisfied customer this study is analyzed. One integrated service quality-customer relationship model 'has also been developed to provide directions to banks such efforts should be done to improve relationships streamline customers and their marketing efforts.

Service quality dimensions affect customer's dimensions relationship management partly responds to customer, with customer knowledge and customer value evaluation which in turn affect customer relationship management activity has two dimensions (customer acquisition and customer information system). It emerges the major findings of the study. Has been developed on the basis of model the services available to customers and the type of bank they choose primary bank this study provides actionable information to banks which they can design and implement marketing programs different requirements of customers significant differences about the service dimensions of quality and customer relationship management among the different demographic and financial characteristics of the bank customers, beneficial insights where banks should focus and what kind of needs to be an activity should be developed to connect with customers so that they be satisfied with the banks.

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A NOVEL SCORE FUNCTION ON INTUITIONISTIC FUZZY SETS AND ITS APPLICATION TO MULTI CRITERIA GROUP DECISION MAKING PROBLEM

M. Maragatham¹, P. Lakshmi Gayathri²

¹Associate professor, Department of Mathematics, Periyar EVR college, Trichy-23, India;

²Assistant professor, Department of Mathematics, Dr. MGR Janaki college, Chennai-28, India;

Abstract

In this paper, a new score function on intuitionistic fuzzy sets (IFS) was proposed which can overcome the drawbacks of the existing score functions. Also multi criteria group decision making method was discussed based on the proposed new score function.

Keywords: Intuitionistic Fuzzy Sets (IFS), Multi criteria group decision making (MCDM), Score function.

1. Introduction

Zadeh [13] in 1965 introduced the concept of fuzzy sets. Later it was extended to intuitionistic fuzzy set by Atanassov [1] in which the membership was characterized by degree of membership and degree of non-membership. Atanassov and Gargov [2] introduced the concept of interval valued intuitionistic fuzzy sets (IVIFS). In recent years, MCDM has been used in various fields. In [11] Wu and Chen presented an MCDM method which was based on intuitionistic fuzzy sets (IFS). Many scoring functions are existing to rank the alternatives. Some of them are proposed by, Chen & Tan [4], Kharal [5], Lin et al [6][7], Liu & Wang [8], Wang et al. [9]. In this paper, we have proposed a new score function which can overcome the drawbacks of the existing score functions [4,5,6,7,8,9], also a MCGDM approach was explained using the new proposed score function. A comparative analysis of the existing score information & the proposed score function was also made to analyze the drawback of the existing method.

This paper is organized as follows: Section 2 explains the basic concepts of IFVs. In section 3, we discussed briefly the existing score functions. In Section 4, we propose a new score function of IFVs and with the example, we analyze the drawback of the existing score function with the proposed one. Finally, an MCDM approach was explained using proposed score functions.

2. Preliminaries

Definition 2.1: Intuitionistic fuzzy set

Let X be a non-empty set, then $A = \{ \langle x, \mu_A(x), \nu_A(x) \rangle, x \in X \}$ is an intuitionistic fuzzy set, where $\mu_A(x)$ is the membership degree of x belongs to X and $\nu_A(x)$ is the non-membership degree of x belongs to X , such that $\mu_A: X \rightarrow [0,1], \nu_A: X \rightarrow [0,1]$ and $0 \leq \mu_A(x) + \nu_A(x) \leq 1$, for all $x \in X$.

For convenience, we write Intuitionistic fuzzy value as $A = \langle [a,b] \rangle$ where a is the degree of membership and b is the degree of non-membership.

Definition 2.2: Score Function of an Intuitionistic Value (IFV)

Let $A = \{ \langle x, \mu_A(x), \nu_A(x) \rangle, x \in X \}$ be an intuitionistic fuzzy number, then the score function $S(A)$ is defined as

$$S(A) = \mu_A(x) - \nu_A(x), \text{ for all } x \in X.$$

Definition 2.3: Accuracy Function of an Intuitionistic Fuzzy Value (IFV)

Let $A = \{ \langle x, \mu_A(x), \nu_A(x) \rangle, x \in X \}$ be an intuitionistic fuzzy number, then the accuracy function $E(A)$ is defined as

$$E(A) = \mu_A(x) + \nu_A(x), \text{ for all } x \in X.$$

Definition 2.4: Hesitancy degree of an Intuitionistic Fuzzy Value (IFV)

Let $A = \{ \langle x, \mu_A(x), \nu_A(x) \rangle, x \in X \}$ be an intuitionistic fuzzy number, then the hesitancy degree of A denoted by π_A is defined as

$$\pi_A = 1 - \mu_A(x) - \nu_A(x), \text{ for all } x \in X.$$

Definition 2.5: Comparison of an Intuitionistic Fuzzy Numbers (IFNs)

Let $A_1 = \{ \langle x, \mu_{A_1}(x), \nu_{A_1}(x) \rangle, x \in X \}$ and $A_2 = \{ \langle x, \mu_{A_2}(x), \nu_{A_2}(x) \rangle, x \in X \}$ be any two intuitionistic fuzzy numbers. Let $S(A_1)$, $S(A_2)$ and $E(A_1)$, $E(A_2)$ be the score functions and accuracy functions of A_1 and A_2 respectively. Then

- i) If $S(A_1) < S(A_2)$ then $A_1 < A_2$
- ii) If $S(A_1) > S(A_2)$ then $A_1 > A_2$
- iii) If $S(A_1) = S(A_2)$ and $E(A_1) < E(A_2)$ then $A_1 < A_2$
- iv) If $S(A_1) = S(A_2)$ and $E(A_1) > E(A_2)$ then $A_1 > A_2$
- v) If $S(A_1) = S(A_2)$ and $E(A_1) = E(A_2)$ then $A_1 = A_2$

Definition 2.5: Ranking of IFV

In [14], Zhang and Xu proposed a new ranking method for IFV which is given as follows:

Let $A_1 = \langle a_1, b_1 \rangle$, $A_2 = \langle a_2, b_2 \rangle$ be two IFVs, where $a_1 \in [0, 1]$, $b_1 \in [0, 1]$, $0 \leq a_1 + b_1 \leq 1$, $a_2 \in [0, 1]$, $b_2 \in [0, 1]$ and $0 \leq a_2 + b_2 \leq 1$. Then

- i) If $a_1 \geq a_2$ and $b_1 < b_2$, then $A_1 > A_2$.
- ii) If $a_1 < a_2$ and $b_1 \geq b_2$, then $A_1 < A_2$.
- iii) If $a_1 = a_2$ and $b_1 = b_2$, then $A_1 = A_2$.

3. Existing Score Functions of IFV

Let $A = \langle a, b \rangle$ be an IFV, Where $a \in [0, 1]$, $b \in [0, 1]$, $\pi_A = 1 - a - b$, $\pi_A \in [0, 1]$ and $0 \leq a + b \leq 1$

1) Chen and Tan's score functions S_1 [4]

$$S_1(A) = a - b, S_1(A) \in [-1, 1]$$

The larger the value of $S_1(A)$, The larger the IFV A

2) Kharal's Score function S_2 [5]

$$S_2(A) = (a-b)\pi_A, S_2(A) \in [0,1]$$

The larger the value of $S_2(A)$, The larger the IFV A.

3) Kharal's score function S_3 [5]

$$S_3(A) = a - \frac{(b+\pi_A)}{2}, S_3(A) \in [-1,1]$$

The larger the value of $S_3(A)$, The larger the IFV A.

4) Kharal's Score function S_4 [5]

$$S_4(A) = \frac{a+b}{2} - \pi_A, S_4(A) \in [0,1]$$

The larger the value of $S_4(A)$, The larger the IFV A.

5) Lin's et al Score function S_5 [6]

$$S_5(A) = \frac{1}{2}a + \frac{3}{2}(1 - \pi_A) - 1, S_5(A) \in [-1,0.5]$$

The larger the value of $S_5(A)$, The larger the IFV A.

6) Lin's et al Score function S_6 [7]

$$S_6(A) = 2a+b-1, S_6(A) \in [0,1]$$

The larger the value of $S_6(A)$, The larger the IFV A.

7) Liu and Wang's Score function S_7 [8]

$$S_7(A) = a+a(1-a-b), S_7(A) \in [0,1]$$

The larger the value of $S_7(A)$, The larger the IFV A.

8) Wang's et al Score function S_8 [9]

$$S_8(A) = \frac{3a-b-1}{2}, S_8(A) \in [-1,1]$$

The larger the value of $S_8(A)$, The larger the IFV A.

The existing score functions for ranking the IFVs have the drawbacks that they get invalid ranking results or they can't distinguish the difference between the IFVs. In order to overcome the drawbacks, the new score function was proposed.

4. The Proposed New score function of IFVs

Let $A = \langle a, b \rangle$ be an IFV, where $a \in [0,1]$ $b \in [0,1]$ and $0 \leq a+b \leq 1$

Let π_A be the hesitancy degree of the IFV. The score value $S_N(A)$ of the IFV A is defined as follows:

$$\begin{aligned} S_N(A) &= \frac{a-b}{2} - (1-a-b) \log(1+1-a-b) \\ &= \frac{a-b}{2} - (1-a-b) \log(2-a-b) \\ S_N(A) &= \frac{a-b}{2} - \pi_A \log(1+\pi_A) \end{aligned}$$

Where $S_N(A) \in [-1, 1]$, The larger the value of $S_N(A)$, The larger the IFV A.

Property 1: If IFV A = $\langle a, b \rangle$, where $a \in [0, 1]$ and $b \in [0, 1]$ and $0 \leq a+b \leq 1$, then $S_N(A) \in [-1, 1]$

Proof: If IFV A = $\langle 1, 0 \rangle$, then $S_N(A) = \frac{1-0}{2} - (1-1-0) \log(2-1-0) = 0.5$

If IFV A = $\langle 0, 1 \rangle$, then $S_N(A) = \frac{0-1}{2} - (1-0-1) \log(2-0-1) = -0.5$

Therefore $S_N(A) \in [-1, 1]$

Property 2: Let $A_1 = \langle a_1, b_1 \rangle$, $A_2 = \langle a_2, b_2 \rangle$ are two IFVs, if $A_1 \neq A_2$, then $S_N(A_1) \neq S_N(A_2)$

Proof: Let $A_1 = \langle a_1, b_1 \rangle$, $A_2 = \langle a_2, b_2 \rangle$

Then $\pi_{A_1} = 1 - a_1 - b_1$, $\pi_{A_2} = 1 - a_2 - b_2$

Case i) Let us assume $A_1 > A_2$, then $a_1 \geq a_2$ & $b_1 < b_2$.

Consider, $S_N(A_1) - S_N(A_2)$

$$\begin{aligned} &= \frac{a_1 - b_1}{2} - (1 - a_1 - b_1) \log(2 - a_1 - b_1) - \left[\frac{a_2 - b_2}{2} - (1 - a_2 - b_2) \log(2 - a_2 - b_2) \right] \\ &= \frac{1}{2} [(a_1 - a_2) + (b_2 - b_1)] + [(1 - a_2 - b_2) \log(2 - a_2 - b_2) - (1 - a_1 - b_1) \log(2 - a_1 - b_1)] \end{aligned}$$

Since $a_1 \geq a_2 \Rightarrow a_1 - a_2 \geq 0$ & $b_1 < b_2 \Rightarrow b_2 - b_1 \geq 0$

Hence $(a_1 - a_2) + (b_2 - b_1) \geq 0$

So, $\frac{1}{2} [(a_1 - a_2) + (b_2 - b_1)] \geq 0$

Also $(1 - a_2 - b_2) \log(2 - a_2 - b_2) - (1 - a_1 - b_1) \log(2 - a_1 - b_1) \neq 0$, Hence

$$\frac{1}{2} [(a_1 - a_2) + (b_2 - b_1)] + [(1 - a_2 - b_2) \log(2 - a_2 - b_2) - (1 - a_1 - b_1) \log(2 - a_1 - b_1)] \neq 0$$

$S_N(A_1) - S_N(A_2) \neq 0$

$S_N(A_1) \neq S_N(A_2)$. Hence proved

Case ii) Let us assume $A_1 < A_2$, then $a_1 \leq a_2$ and $b_1 > b_2$

Since $a_1 \leq a_2 \Rightarrow a_2 - a_1 \geq 0$

$$b_1 \leq b_2 \Rightarrow b_1 - b_2 \geq 0 \text{ (or) } b_2 - b_1 < 0$$

$$\text{So } (1-a_2-b_2) \log (2-a_2-b_2) - (1-a_1-b_1) \log (2-a_1-b_1) \neq 0$$

$$S_N(A_1) - S_N(A_2) \neq 0$$

$$S_N(A_1) \neq S_N(A_2)$$

Therefore if $A_1 \neq A_2$, Then $S_N(A_1) \neq S_N(A_2)$

Hence the proof

Property 3: Let $A_1 = \langle a_1, b_1 \rangle$, $A_2 = \langle a_2, b_2 \rangle$ are two IFVs.

i) If $A_1 > A_2$, Then $S_N(A_1) > S_N(A_2)$

ii) If $A_1 < A_2$, Then $S_N(A_1) < S_N(A_2)$

Proof:

Case (i) If $A_1 > A_2$, Then $a_1 \geq a_2$ and $b_1 < b_2$

Consider,

$$S_N(A_1) - S_N(A_2) = \frac{1}{2} [(a_1 - a_2) + (b_2 - b_1)] + [(1-a_2-b_2) \log (2-a_2-b_2) - (1-a_1-b_1) \log (2-a_1-b_1)]$$

Since $a_1 \geq a_2 \Rightarrow a_1 - a_2 \geq 0$ and $b_1 < b_2 \Rightarrow b_2 - b_1 \geq 0$

$$(2-a_1-b_1) \leq (2-a_2-b_2)$$

$$\log (2-a_1-b_1) \leq \log (2-a_2-b_2)$$

$$\log (2-a_2-b_2) - \log (2-a_1-b_1) \geq 0$$

Thus $(1-a_2-b_2) \log (2-a_2-b_2) - (1-a_1-b_1) \log (2-a_1-b_1) \geq 0$

$$\text{Also } \frac{1}{2} [(a_1 - a_2) + (b_2 - b_1)] \geq 0$$

$$\text{Therefore, } \frac{1}{2} [(a_1 - a_2) + (b_2 - b_1)] + (1-a_2-b_2) \log (2-a_2-b_2) - (1-a_1-b_1) \log (2-a_1-b_1) \geq 0$$

This implies $S_N(A_1) - S_N(A_2) \geq 0$

$$S_N(A_1) \geq S_N(A_2)$$

Hence the proof

Case (ii) if $A_1 < A_2$, then $S_N(A_1) < S_N(A_2)$.

Consider, $S_N(A_1) - S_N(A_2)$

$$= \frac{1}{2} [(a_1 - a_2) + (b_2 - b_1)] + ((1-a_2-b_2) \log (2-a_2-b_2) - (1-a_1-b_1) \log (2-a_1-b_1))$$

Since $A_1 < A_2$, Then $a_1 < a_2$ and $b_1 \geq b_2$

Which implies $a_2 - a_1 > 0$ and $b_1 - b_2 \geq 0$

That is $a_1 - a_2 < 0$ and $b_2 - b_1 \leq 0$

$$2 - a_1 - b_1 > 2 - a_2 - b_2$$

$$\log(2 - a_1 - b_1) > \log(2 - a_2 - b_2)$$

$$\log(2 - a_2 - b_2) - \log(2 - a_1 - b_1) < 0$$

$$(1 - a_2 - b_2) \log(2 - a_2 - b_2) - (1 - a_1 - b_1) \log(2 - a_1 - b_1) < 0$$

$$\text{Also } \frac{1}{2} [(a_1 - a_2) + (b_2 - b_1)] < 0$$

$$\text{Hence } \frac{1}{2} [(a_1 - a_2) + (b_2 - b_1)] + [(1 - a_2 - b_2) \log(2 - a_2 - b_2) - (1 - a_1 - b_1) \log(2 - a_1 - b_1)] < 0$$

This implies $S_N(A_1) - S_N(A_2) < 0$

$$S_N(A_1) < S_N(A_2)$$

Hence the proof

Example 1:

Let $A_1 = \langle 0.20, 0 \rangle$ $A_2 = \langle 0.20, 0.20 \rangle$ be two IFVs $\pi_{A_1} = 1 - 0.20 - 0 = 0.80$, $\pi_{A_2} = 1 - 0.20 - 0.20 = 0.60$

The ranking order between the IFVs value $A_1 = \langle 0.20, 0 \rangle$ $A_2 = \langle 0.20, 0.20 \rangle$ should be $A_1 > A_2$ by definition 2.5 since $a_1 \geq a_2$, $b_1 < b_2$, then $A_1 > A_2$.

But from table1 we see that the score functions S_3, S_4, S_5, S_6 gives the unreasonable ranking orders between the IFVs.

Table 1: Ranking orders of IFVs of different score functions.

Score Functions / IFVs	Example 1 $A_1 = \langle 0.20, 0 \rangle$ $A_2 = \langle 0.20, 0.20 \rangle$	Example 2 $A_1 = \langle 0, 0.4 \rangle$ $A_2 = \langle 0.3, 0 \rangle$
S_1	$A_1 > A_2$	$A_1 < A_2$
S_2	$A_1 > A_2$	$A_1 < A_2$
S_3	$A_1 = A_2$	$A_1 < A_2$
S_4	$A_1 < A_2$	$A_1 > A_2$
S_5	$A_1 < A_2$	$A_1 = A_2$
S_6	$A_1 < A_2$	$A_1 < A_2$
S_7	$A_1 > A_2$	$A_1 < A_2$

S_8	$A_1 > A_2$	$A_1 < A_2$
S_N	$A_1 > A_2$	$A_1 < A_2$
Definition 2.5	$A_1 > A_2$	$A_1 < A_2$

Example 2:

Let $A_1 = \langle 0, 0.4 \rangle$ $A_2 = \langle 0.3, 0 \rangle$ be two IFVs $\pi_{A_1} = 1 - 0 - 0.4 = 0.6$, $\pi_{A_2} = 1 - 0.3 - 0 = 0.7$

The ranking order between the IFVs value $A_1 = \langle 0, 0.4 \rangle$ $A_2 = \langle 0.3, 0 \rangle$ should be $A_1 < A_2$ by definition 2.5 since $a_1 < a_2, b_1 > b_2$, then $A_1 < A_2$

But from the table 1, we see that the score functions S_4 and S_5 gives the unreasonable ranking orders between the IFVs.

Example 3: Let $A_1 = \langle 0.5, 0.5 \rangle$ $A_2 = \langle 0.4, 0.4 \rangle$ $A_3 = \langle 0.3, 0.3 \rangle$ $A_4 = \langle 0.2, 0.2 \rangle$ $A_5 = \langle 0.1, 0.1 \rangle$.

Then from table 2, we see that the score functions S_1 and S_2 were not able to distinguish the IFVs A_1, A_2, A_3, A_4, A_5 .

Therefore, in summary, from Table 1 and Table 2, we see that the new proposed score function can overcome the drawbacks of the existing score functions [4,5,6,7,8,9].

Table 2: Ranking orders of IFVs for different score functions.

IFVs $A_1 = \langle 0.5, 0.5 \rangle$ $A_2 = \langle 0.4, 0.4 \rangle$ $A_3 = \langle 0.3, 0.3 \rangle$ $A_4 = \langle 0.2, 0.2 \rangle$ $A_5 = \langle 0.1, 0.1 \rangle$						
Score Functions / IFVs	A_1	A_2	A_3	A_4	A_5	Ranking
S_1	0	0	0	0	0	$A_1 = A_2 = A_3 = A_4 = A_5$
S_2	0	0	0	0	0	$A_1 = A_2 = A_3 = A_4 = A_5$
S_3	0.25	0.1	-0.05	-0.2	-0.35	$A_1 > A_2 > A_3 > A_4 > A_5$
S_4	0.5	2	-0.1	-0.4	-0.7	$A_1 > A_2 > A_3 > A_4 > A_5$
S_5	0.75	0.4	0.05	-0.3	-0.65	$A_1 > A_2 > A_3 > A_4 > A_5$
S_6	0.5	0.2	-0.1	-0.3	-0.65	$A_1 > A_2 > A_3 > A_4 > A_5$
S_7	0.5	0.48	0.42	0.32	0.18	$A_1 > A_2 > A_3 > A_4 > A_5$
S_8	0	-0.1	-0.2	-0.3	-0.4	$A_1 > A_2 > A_3 > A_4 > A_5$
S_N	0	-0.0158	-0.0584	-0.1224	-0.2042	$A_1 > A_2 > A_3 > A_4 > A_5$

5. MCGDM – Method based on the proposed new score function of IFVs

Let $A_1 = \{A_1, A_2, \dots, A_m\}$ be as set of alternatives and $G = \{G_1, G_2, \dots, G_n\}$ be a set of attributes let $w = (w_1, w_2, \dots, w_n)$ be the weight vector of attributes provided by the decision makes, $w_j \in [0, 1]$, $j=1, 2, \dots, n$, $\sum_{j=1}^n w_j = 1$.

Let $D = \{D_1, D_2, \dots, D_t\}$ be the set of decision makes, $V = (V_1, V_2, \dots, V_n)$ be the weighting vector of decision makes with $V_k \in [0, 1]$, $\sum_{k=1}^t v_k = 1$.

Suppose $(\tilde{R}_{ij}^{(k)})_{m \times n} = [\mu_{ij}^{(k)}, \gamma_{ij}^{(k)}]_{m \times n}$ is the intuitionistic fuzzy decision matrix $\mu_{ij}^{(k)} \in [0, 1]$, $\gamma_{ij}^{(k)} \in [0, 1]$, $\mu_{ij}^{(k)} + \gamma_{ij}^{(k)} \leq 1$, $i=1, 2, \dots, m$, $j=1, 2, \dots, n$, $k = 1, 2, \dots, t$.

Step 1:- Utilize the decision matrix \tilde{R}_k and the IFWA

$$\begin{aligned} \tilde{R}_{ij}^{(k)} &= \langle \mu_i^{(k)}, \gamma_i^{(k)} \rangle = \text{IFWA}_w(\tilde{r}_{i1}^{(k)}, \tilde{r}_{i2}^{(k)}, \dots, \tilde{r}_{in}^{(k)}) \quad i=1, 2, \dots, m, j=1, 2, \dots, n, k = 1, 2, \dots, t. \\ &= \langle 1 - \prod_{j=1}^n (1 - \mu_j)^{w_j}, \prod_{j=1}^n \gamma_j^{w_j} \rangle \end{aligned}$$

to derive the individual overall preference intuitionistic fuzzy values $\tilde{r}_i^{(k)}$ of the alternatives A_i .

Step2: Calculate the new proposed score function of the overall intuitionistic fuzzy values.

Step3: Rank the alternatives A_i in accordance with the score value.

Numerical example:

A company needs to identify the best supplier from a set of four suppliers, namely S_1, S_2, S_3, S_4 . Three criteria must be evaluated. They are Quantity (C_1), Reliability (C_2), and Price (C_3). The four alternatives are to be evaluated using Intuitionistic fuzzy numbers by three decision makers (whose weighting vector $w = (0.3, 0.5, 0.2)^T$ under the above three criteria (whose weighting vector $w = (0.4, 0.3, 0.3)^T$ and construct respectively the decision matrices as listed in the following matrices.

$$R^{(1)} = \begin{matrix} & C_1 & C_2 & C_3 \\ \begin{matrix} S_1 \\ S_2 \\ S_3 \\ S_4 \end{matrix} & \begin{pmatrix} [0.3, 0.4] & [0.2, 0.3] & [0.1, 0.4] \\ [0.1, 0.3] & [0.5, 0.2] & [0.4, 0.2] \\ [0.1, 0.5] & [0.4, 0.2] & [0.6, 0.1] \\ [0.2, 0.5] & [0.1, 0.3] & [0.6, 0.3] \end{pmatrix} \end{matrix}$$

$$R^{(2)} = \begin{matrix} & C_1 & C_2 & C_3 \\ \begin{matrix} S_1 \\ S_2 \\ S_3 \\ S_4 \end{matrix} & \begin{pmatrix} [0.3, 0.5] & [0.4, 0.1] & [0.3, 0.2] \\ [0.2, 0.4] & [0.3, 0.5] & [0.3, 0.4] \\ [0.2, 0.4] & [0.2, 0.4] & [0.5, 0.1] \\ [0.3, 0.5] & [0.4, 0.3] & [0.4, 0.2] \end{pmatrix} \end{matrix}$$

$$C_1 \quad C_2 \quad C_3$$

$$R^{(1)} = \begin{matrix} S_1 \\ S_2 \\ S_3 \\ S_4 \end{matrix} \begin{pmatrix} [0.2,0.4] & [0.5,0.1] & [0.2,0.3] \\ [0.5,0.1] & [0.4,0.2] & [0.1,0.3] \\ [0.3,0.4] & [0.3,0.4] & [0.2,0.4] \\ [0.4,0.2] & [0.2,0.1] & [0.3,0.1] \end{pmatrix}$$

Integrate all the individual decision in to group decision matrix using IFWA operator. The collective matrix is given by

$$R_{ij}^{(k)} = \begin{matrix} C_1 & C_2 & C_3 \\ S_1 \\ S_2 \\ S_3 \\ S_4 \end{matrix} \begin{pmatrix} [0.281,0.447] & [0.369,0.139] & [0.225,0.267] \\ [0.246,0.278] & [0.386,0.316] & [0.297,0.307] \\ [0.193,0.428] & [0.285,0.367] & [0.486,0.132] \\ [0.294,0.416] & [0.282,0.241] & [0.452,0.197] \end{pmatrix}$$

Integrate all the elements S_{ij} ($j=1,2,3,4$) of the i^{th} row by means of IFWA operator and denote it by

$$\hat{S}_{i1} \cdot \hat{S}_{i1} = [0.293,0.270] \hat{S}_{i2} = [0.306,0.298] \hat{S}_{i3} = [0.321,0.287] \hat{S}_{i4} = [0.342,0.282]$$

Calculate the new proposed score function S_N for each alternative

$$S_N(\hat{S}_{i1}) = -0.05731, S_N(\hat{S}_{i2}) = -0.05341, S_N(\hat{S}_{i3}) = -0.03966, S_N(\hat{S}_{i4}) = -0.02193$$

According to the value of the score function, the suppliers are arranged as follows:

$S_4 > S_3 > S_2 > S_1$. So the best supplier is S_1 .

Conclusion

In this paper, we proposed a new score function of intuitionistic fuzzy values (IFVs). From Table 1 and Table 2, we can see that the proposed new score function S_N of IFVs can overcome the drawbacks of the existing score functions [4,5,6,7,8,9]. Also an MCGDM method was discussed based on the proposed score function. Further, this can be extended to Interval Valued Intuitionistic Fuzzy Sets and etc.

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OPTIMAL TRANSFER POLICY OF AN INVENTORY MODEL FOR IMPERFECT ITEMS WITH STOCK DEPENDENT DEMAND AND UNCERTAIN HOLDING COST: A FUZZY APPROACH

¹M.Maragathamand ²R.Ananthi

¹PG and Research Department Of Mathematics, Periyar E.V.R College, Trichy-23.

²PG Department Of Mathematics, Periyar Govt. Arts College, Cuddalore

Abstract:

The present study investigates a fuzzy inventory model for imperfect items, in which demand is stock dependent and holding stock is uncertain. Since holding cost is uncertain, it is taken as a triangular fuzzy number. In this model, retailers optimal order quantity and optimal number of transfers per order from the warehouse to the retailers display area are determined. The objective is to maximize the retailer's average profit. Numerical examples are presented to illustrate the model developed.

1.1 Introduction

Inventory control is an important field for both real world applications and research purpose. In an inventory control system, the assumption of perfect quality in certain products is unrealistic and if adopted, may lead to errors in determining the order size and related inventory cycle time.

In recent years, the topic of transfer batching, the integration of production and inventory model, as well as the procurement and shipment of inventory items have been considered by some researchers.

In 2009, Goyal and Chun-Tao Chang [5] formulated an optimal ordering and transfer policy for an inventory with stock dependent demand, In 2004 Chang [2] derived an inventory model with stock-dependent demand and nonlinear holding costs for deteriorating items. In 2003, Yang and Wee [12] established an integrated multi lot size production inventory model for deteriorating items.

During 2000, Goyal and Nebebe [4] analysed the determination of economic production- shipment policy for a single vendor-single buyer system. In 1997, Hill [6] investigated the single-supplier single-buyer integrated, production- inventory model with a generalized policy.

In 1995, Goyal [3] obtained the joint vendor, multi-buyer integrated inventory model. In 1993, Pal, Goswami and Chaudhuri [9] derived a deterministic inventory model for deteriorating items with stock-dependent demand rate. In 1986 Banerjee A [1] presented a joint economic lot-size model for purchaser and vendor. In 1998, Viswanathan [11] proposed the optimal strategy for the integrated vendor-buyer inventory model,

In 1972 Levin, McLaughlin, Lamone and Kottas [7] developed the productions /operations management: contemporary policy form an aging operating systems. In 1989, Mandaland Phaujdar[8] discussed an inventory model for deteriorating ítems and stock-dependent consumption rate. In 1982, Silver and Peterson [10] analysed the decisión systems for inventory management and production planning.

This paper considers an inventory model for imperfect items with stock dependent demand and uncertain holding cost. In certain situation, uncertainties are due to fuzziness, primarily introduced by Zadeh[13]is applicable.

The holding cost is taken as a triangular fuzzy number. When the retailer receives the delivered items only some of the items are displayed in the shop and the remaining items are kept in the warehouse. The display space is limited and the holding cost inside the shop is higher than the holding cost in the warehouse. The objective of the model is to determine the ordering and transfer schedule which maximizes the average profit per unit time yielded by the retailer. Hence, in this paper, we have developed an ordering – transfer inventory model with stock dependent demand. For defuzzification Graded Mean Integration Representation Methodis used.

The rest of the paper is organized as follows: In section 2, the preliminaries are given. In section 3, notations and assumptions are given. A mathematical model is presented in section 4. An example is given in section 5. Sensitivity Analysis is derived in section 6. Concluded in section 7. Reference is given in section 8.

2. Preliminaries

2.1 Fuzzy Number

A fuzzy set \tilde{A} on R must possess at least the following three properties to qualify as a fuzzy number.

- i) \tilde{A} must be normal fuzzy set.
- ii) $\alpha\tilde{A}$ must be closed interval for every $\alpha \in [0, 1]$.
- iii) the support of \tilde{A} and ${}^{0+}\tilde{A}$ must be bounded.

2.2 Triangular fuzzy number

It is a fuzzy number represented with three points as follows:

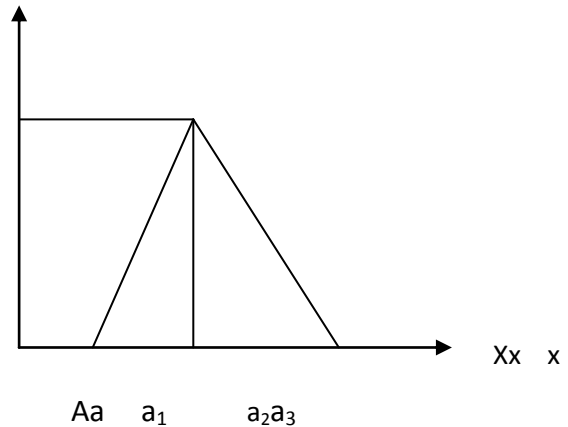
$$\tilde{A} = (a_1, a_2, a_3).$$

This representation is interpreted as membership functions and holds the following conditions.

- i) $\mu_A(x)$ is strictly increasing when $x \in [a_1, a_2]$

ii) $\mu_A(x)$ is strictly decreasing when $x \in [a_2, a_3]$ μ_A

$$\text{iii) } \mu_A(x) = \begin{cases} 0 & \text{if } x < a_1 \\ \frac{x - a_1}{a_2 - a_1} & \text{if } a_1 \leq x \leq a_2 \\ \frac{a_3 - x}{a_3 - a_2} & \text{if } a_2 \leq x \leq a_3 \\ 0 & \text{if } x > a_3 \end{cases} \quad 1$$



2.3 Operations on Fuzzy Number

The Function Principle:

The function principle is used for the operation of addition, subtraction, multiplication and division of fuzzy numbers.

Suppose $\tilde{A} = (a_1, a_2, a_3)$ and $\tilde{B} = (b_1, b_2, b_3)$ are two triangular fuzzy numbers. Then

(i) The addition of \tilde{A} and \tilde{B} is

$$\tilde{A} + \tilde{B} = (a_1 + b_1, a_2 + b_2, a_3 + b_3) \text{ where } a_1, a_2, a_3, b_1, b_2, b_3 \text{ are any real numbers.}$$

(ii) The subtraction of \tilde{B} from \tilde{A} is

$$\tilde{A} - \tilde{B} = (a_1 - b_3, a_2 - b_2, a_3 - b_1) \text{ where } a_1, a_2, a_3, b_1, b_2, b_3 \text{ are any real numbers.}$$

(iii) The multiplication of \tilde{A} and \tilde{B} is

$$\tilde{A} \times \tilde{B} = (c_1, c_2, c_3) \text{ where } T = (a_1b_1, a_1b_3, a_3b_1, a_3b_3), c_1 = \min T, c_2 = a_2b_2, c_3 = \max T, \text{ if } a_1, a_2, a_3,$$

b_1, b_2, b_3 are all non zero positive real numbers.

(iv) $\frac{1}{\tilde{B}} = \tilde{B}^{-1} = \left(\frac{1}{b_3}, \frac{1}{b_2}, \frac{1}{b_1} \right)$ where b_1, b_2, b_3 are all non zero positive real numbers, then the

division of \tilde{A} and

$$\tilde{B} \text{ is } \frac{\tilde{A}}{\tilde{B}} = \left(\frac{a_1}{b_3}, \frac{a_2}{b_2}, \frac{a_3}{b_1} \right).$$

(v) For any real number K , $K \tilde{A} = (Ka_1, Ka_2, Ka_3)$, if $K > 0$, $K \tilde{A} = (Ka_3, Ka_2, Ka_1)$, if $K < 0$

2.4 Defuzzification

Graded Mean Integration Representation Method

If $\tilde{A} = (a_1, a_2, a_3)$ is a triangular fuzzy number then by the graded mean integration representation method, the defuzzified value of \tilde{A} is,

$$p(\tilde{A}) = \frac{a_1 + 4a_2 + a_3}{6}$$

3. Assumptions and Notations

3.1 Assumptions

The following assumptions are adopted.

- (1) Shortages are not allowed
- (2) Maximum allowable number of displayed stocks in the display area is M .
- (3) The lead time is zero.
- (4) The time into transfer items from the warehouse into the display area is very small.

3.2 Notations

The following notations are used in this model.

$\widetilde{h_1}$ - holding cost per unit item per unit time in the warehouse = (h_{11}, h_{12}, h_{13})

$\widetilde{h_2}$ - holding cost per unit item per unit time in the display area = (h_{21}, h_{22}, h_{23})

M - Maximum allowable number of displayed stock in the display area.

p - Selling price per unit

c - Purchasing cost per order

s - Ordering cost per order

a - fixed cost per transfer from the warehouse to the display area

T - Replenishment cycle time in the warehouse

n - Number of transfers from the warehouse to the display area per order.

4. Mathematical Formulation and Solution of the Model.

Inventory of this model is of two types.

(i) Stock in the warehouse.

(ii) Stock in the display area.

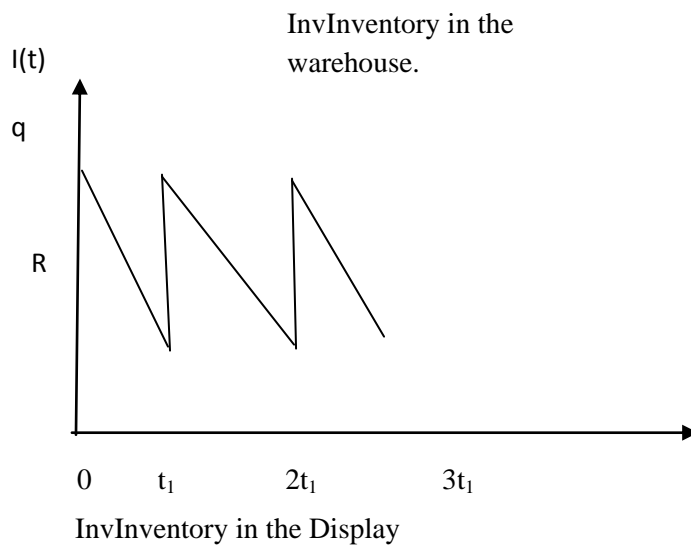
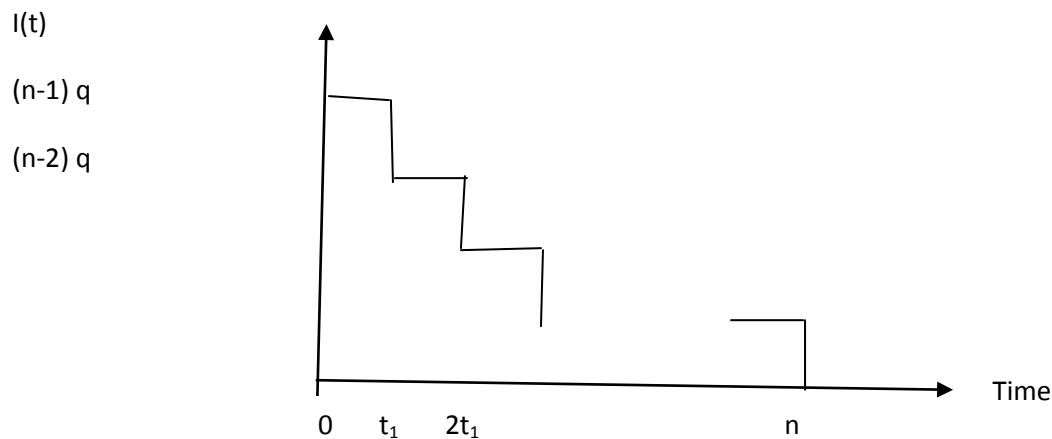
The retailer receives the delivered products and only some of the items are kept in the warehouse, because of the limited display space in the shop. The retailer orders Q items per order from the supplier; q items are transferred to display area and stocks $Q - q$ in the warehouse. The quantity q per transfer is transferred from the warehouse to display area, until

the inventory level in the warehouse reaches to zero. If the retailer transfers the items from warehouse to display area in n times, then $q = \theta Q/n$.

We consider the inventory model of items in which some of them are imperfect, with stock dependent demand and uncertain holding costs. Since holding cost is uncertain, we consider these parameters as fuzzy numbers. The objective of this model is to determine the ordering and transfer schedule which maximizes the average profit of the retailer. Here percentage of imperfect item is θ .

The retailer received Q items per order from a supplier and $(1 - \theta)Q$ items are perfect items and imperfect items are identified and removed before keeping the products in the display area, the time and cost for screening the items is negligible. Imperfectness might occur during the shipment from supplier to retailer.

Now total cost in the warehouse = ordering cost + holding in the inventory.



$$\begin{aligned} \text{Total cost in the warehouse} &= s + h_1[qt_1 + 2qt_1 + 3qt_1 + \dots + (n-1)qt_1] \\ &= s + h_1qt_1 \frac{(n-1)(n-2)}{2} \end{aligned}$$

Inventory level $I(t)$ of display area at any time t is given by

$$\frac{dI(t)}{dt} + \theta I(t) = -D(I(t)), 0 \leq t \leq t_1,$$

$$\frac{dI(t)}{dt} + \theta I(t) = -a - bI(t).$$

Boundary conditions are $I(t_1) = R, I(0) = R + q (= M)$

Inventory level in the display area:

$$I(t)e^{(\theta+b)t} = (-a) \frac{e^{(\theta+b)t}}{\theta+b} + c \dots \dots \dots (1)$$

Using the boundary condition $I(t_1) = R,$

$$I(t) = \frac{-a}{\theta+b} + e^{(\theta+b)(t_1-t)} \left[R + \frac{a}{\theta+b} \right] \dots \dots \dots (2)$$

Holding cost in the display area:

$$\begin{aligned} \widetilde{HC}_2 &= \widetilde{h}_2 \int_0^{t_1} I(t) dt \\ &= \widetilde{h}_2 \int_0^{t_1} \left\{ \frac{-a}{\theta+b} + e^{(\theta+b)(t_1-t)} \left[R + \frac{a}{\theta+b} \right] \right\} dt \\ &= \widetilde{h}_2 \left\{ \frac{-at_1}{\theta+b} + \frac{1}{\theta+b} \left[R + \frac{a}{\theta+b} \right] (e^{(\theta+b)t_1} - 1) \right\} \end{aligned}$$

Total Holding cost in the display area:

Total Holding cost in the display area is

$$\widetilde{TC}_2 = n \widetilde{h}_2 \left\{ \frac{-at_1}{\theta+b} + \frac{1}{\theta+b} \left[R + \frac{a}{\theta+b} \right] (e^{(\theta+b)t_1} - 1) \right\} \dots \dots \dots (3)$$

Using the boundary condition $I(0) = R + q$ in (2), we get

$$q = \left[R + \frac{a}{\theta+b} \right] (e^{(\theta+b)t_1} - 1) \dots \dots \dots (4)$$

Total cost in the warehouse:

Total cost in the warehouse is

$$\widetilde{TC}_1 = s + \widetilde{h}_1 t_1 \frac{(n-1)(n-2)}{2} \left[R + \frac{a}{\theta+b} \right] (e^{(\theta+b)t_1} - 1) \dots \dots \dots (5)$$

Total cost = Total cost in the warehouse + Total holding cost in the display area + n (cost of transfer)

$$\widetilde{TC} = s + \widetilde{h}_1 t_1 \frac{(n-1)(n-2)}{2} \left[R + \frac{a}{\theta+b} \right] (e^{(\theta+b)t_1} - 1) + n \widetilde{h}_2 \left\{ \frac{-at_1}{\theta+b} + \frac{1}{\theta+b} \left[R + \frac{a}{\theta+b} \right] (e^{(\theta+b)t_1} - 1) \right\} + nf \dots \dots \dots (6)$$

Revenue per cycle:

Revenue per cycle = $(p-c) \int_0^{t_1} D(I(t)) dt$

$$= (p-c) \left\{ at_1 - \frac{abt_1}{\theta+b} + \frac{b}{\theta+b} \left[R + \frac{a}{\theta+b} \right] (e^{(\theta+b)t_1} - 1) \right\}$$

Total revenue over the period $[0, T]$ is

$$\widetilde{TR} = n(p-c) \left\{ at_1 - \frac{abt_1}{\theta+b} + \frac{b}{\theta+b} \left[R + \frac{a}{\theta+b} \right] (e^{(\theta+b)t_1} - 1) \right\} \dots \dots \dots (7)$$

Total profit over the period [0,T]:

\widetilde{TP} = Total Revenue – Total cost – cost of deterioration

$$= n(p-c) \left\{ at_1 - \frac{abt_1}{\theta+b} + \frac{b}{\theta+b} \left[R + \frac{a}{\theta+b} \right] (e^{(\theta+b)t_1} - 1) \right\} - s\widetilde{h}_1 t_1 \frac{(n-1)(n-2)}{2} \left[R + \frac{a}{\theta+b} \right] (e^{(\theta+b)t_1} - 1) - n\widetilde{h}_2 \left\{ \frac{-at_1}{\theta+b} + \frac{1}{\theta+b} \left[R + \frac{a}{\theta+b} \right] (e^{(\theta+b)t_1} - 1) \right\} - nf - n\theta \left[R + \frac{a}{\theta+b} \right] (e^{(\theta+b)t_1} - 1) \dots \dots \dots (8)$$

Average profit per unit time:

$$\widetilde{AP} = \frac{\widetilde{TP}}{T} = \frac{\widetilde{TP}}{nt_1}$$

$$= (p-c) \left\{ a - \frac{ab}{\theta+b} + \frac{b}{(\theta+b)t_1} \left[R + \frac{a}{\theta+b} \right] (e^{(\theta+b)t_1} - 1) \right\} - \frac{s}{nt_1} + \frac{a\widetilde{h}_2}{(\theta+b)} - \left[R + \frac{a}{\theta+b} \right] (e^{(\theta+b)t_1} - 1) \left[\frac{\widetilde{h}_1}{2n} (n^2 - 3n + 2) + \frac{\widetilde{h}_2}{(\theta+b)t_1} - \frac{\theta}{t_1} \right] - \frac{f}{t_1} \dots \dots \dots (9)$$

$$\frac{\partial \widetilde{AP}}{\partial n} = \frac{s}{n^2 t_1} - \left[R + \frac{a}{\theta+b} \right] (e^{(\theta+b)t_1} - 1) \frac{\widetilde{h}_1}{2} \left(1 - \frac{2}{n^2} \right) \dots \dots \dots (10)$$

$$\frac{\partial \widetilde{AP}}{\partial n} = 0 \Rightarrow n^2 = \frac{2s}{\widetilde{h}_1 t_1 \left[R + \frac{a}{\theta+b} \right] (e^{(\theta+b)t_1} - 1)} + 2 \dots \dots \dots (11)$$

$$\frac{\partial^2 \widetilde{AP}}{\partial n^2} = \frac{-2s}{n^3 t_1} - \left[R + \frac{a}{\theta+b} \right] (e^{(\theta+b)t_1} - 1) \frac{2\widetilde{h}_1}{n^3} < 0. \dots \dots \dots (12)$$

$\Rightarrow \widetilde{AP}(n, R, t_1)$ is a concave function of n for fixed t_1 and R.

Now we have to determine the optimal replenishment cycle time and optimal replenishment level in the display area. Taking the first partial derivative of $\widetilde{AP}(n, R, t_1)$ with respect to R, we get

$$\begin{aligned} \frac{\partial \widetilde{AP}}{\partial R} &= (p-c) \frac{b}{(\theta+b)t_1} (e^{(\theta+b)t_1} - 1) - \frac{\widetilde{h}_1}{2} \left(n - 3 + \frac{2}{n} \right) (e^{(\theta+b)t_1} - 1) - \frac{\widetilde{h}_2}{(\theta+b)t_1} (e^{(\theta+b)t_1} - 1) - \frac{\theta}{t_1} (e^{(\theta+b)t_1} - 1) \\ &= (e^{(\theta+b)t_1} - 1) \left\{ \frac{1}{(\theta+b)t_1} [b(p-c) - \widetilde{h}_2] - \frac{\widetilde{h}_1}{2} \left(n - 3 + \frac{2}{n} \right) - \frac{\theta}{t_1} \right\} \\ &\dots \dots \dots (13) \end{aligned}$$

Based on the values of $[b(p-c) - \widetilde{h}_2]$, the following cases are discussed as follows.

Case: 1 $b(p-c) - \widetilde{h}_2 < 0$

If $b(p-c) - \widetilde{h}_2 < 0$ then $\frac{\partial \widetilde{AP}(n,R,t_1)}{\partial R} < 0 \Rightarrow AP$ is a decreasing function of R for fixed n.

\Rightarrow Optimal retransfer level of the item in the display area R^* is zero.

\Rightarrow profit per unit of inventory is less than holding cost in the display area.

\Rightarrow It is not profitable to buildup inventory.

By substituting $R^* = 0$ in $\widetilde{AP}(n, R, t_1)$, we have

$$\widetilde{AP}(n, t_1) = (p - c) \left\{ a - \frac{ab}{\theta + b} + \frac{ab}{(\theta + b)^2 t_1} (e^{(\theta + b)t_1} - 1) \right\} \frac{s}{nt_1} + \frac{a\widetilde{h}_2}{(\theta + b)} - \frac{a}{\theta + b} (e^{(\theta + b)t_1} - 1) \left[\frac{\widetilde{h}_1}{2n} (n^2 - 3n + 2) + \frac{\widetilde{h}_2}{(\theta + b)t_1} - \frac{\theta}{t_1} \right] - \frac{f}{t_1} \dots \dots \dots (14)$$

$$\frac{\partial \widetilde{AP}}{\partial t_1} = (p - c) \left\{ \frac{-ab}{(\theta + b)^2 t_1^2} (e^{(\theta + b)t_1} - 1) + \frac{ab}{(\theta + b)^2 t_1} \frac{e^{(\theta + b)t_1}}{\theta + b} \right\} + \frac{s}{nt_1^2} \frac{a}{\theta + b} (e^{(\theta + b)t_1} - 1) \left[\frac{-\widetilde{h}_2}{(\theta + b)t_1^2} - \frac{\theta}{t_1^2} \right] - \frac{a}{\theta + b} \left(\frac{e^{(\theta + b)t_1}}{\theta + b} \right) \left\{ \frac{\widetilde{h}_1}{2n} (n^2 - 3n + 2) + \frac{\widetilde{h}_2}{(\theta + b)t_1} + \frac{\theta}{t_1} \right\} + \frac{f}{t_1^2} \dots \dots \dots (15)$$

$$\frac{\partial^2 \widetilde{AP}}{\partial t_1^2} = (p - c) \left\{ \frac{2ab}{(\theta + b)^2 t_1^3} (e^{(\theta + b)t_1} - 1) \frac{-ab}{(\theta + b)^2 t_1^2} \left(\frac{e^{(\theta + b)t_1}}{\theta + b} \right) \frac{-ab}{(\theta + b)^3 t_1^2} (e^{(\theta + b)t_1}) + \frac{ab}{(\theta + b)^3 t_1} \frac{e^{(\theta + b)t_1}}{\theta + b} \right\} - \frac{2s}{nt_1^3} - \left(\frac{a}{\theta + b} \right) \left(\frac{e^{(\theta + b)t_1}}{\theta + b} \right) \left[\frac{-\widetilde{h}_2}{(\theta + b)t_1^2} - \frac{\theta}{t_1^2} \right] - \left(\frac{a}{\theta + b} \right) (e^{(\theta + b)t_1} - 1) \left[\frac{2\widetilde{h}_2}{(\theta + b)t_1^3} + \frac{2\theta}{t_1^3} \right] - \frac{a}{(\theta + b)^2} \left(\frac{e^{(\theta + b)t_1}}{\theta + b} \right) \left[\frac{\widetilde{h}_1}{2n} (n^2 - 3n + 2) + \frac{\widetilde{h}_2}{(\theta + b)t_1} + \frac{\theta}{t_1} \right] - \frac{2f}{t_1^3} < 0 \dots \dots \dots (16)$$

$\frac{\partial \widetilde{AP}}{\partial t_1} = 0$ will give unique value of t_1^* for which AP is maximum. t_1^* can be determined by solving equation

(14). Substituting t_1^* and $R^* = 0$ in equation (4), we get the transfer quantity q_n^* can be determined for fixed n.

Case: 2 $b(p - c) - \widetilde{h}_2 = 0$

If $b(p - c) - \widetilde{h}_2 = 0$. Then $\frac{\partial \widetilde{AP}(n, R, t_1)}{\partial R} < 0$

Equation (9) becomes,

$$\widetilde{AP}(n, R, t_1) = (p - c) \left\{ a - \frac{ab}{\theta + b} \right\} - \frac{s}{t_1} + \frac{a\widetilde{h}_2}{(\theta + b)} - \left(R + \frac{a}{\theta + b} \right) (e^{(\theta + b)t_1} - 1) \left[\frac{\widetilde{h}_1}{2n} (n^2 - 3n + 2) + \frac{\theta}{t_1} \right] - \frac{f}{t_1} \dots \dots (17)$$

Since, $\frac{\partial \widetilde{AP}(n, R, t_1)}{\partial R} < 0$, AP is a decreasing function of R for fixed n. It is the same as case 1. Therefore, the optimal retransfer level of the item in the display area R^* should be zero. Substitute $R^* = 0$ in equation (17), we get AP is a function of n and t_1 .

The first order condition for finding the optimal t_1^* is $\frac{\partial \widetilde{AP}(n, t_1)}{\partial t_1} = 0$.

$$\widetilde{AP}(n, t_1) = (p - c) \left\{ a - \frac{ab}{\theta + b} \right\} - \frac{s}{t_1} + \frac{a\widetilde{h}_2}{(\theta + b)} - \left(\frac{a}{\theta + b} \right) (e^{(\theta + b)t_1} - 1) \left[\frac{\widetilde{h}_1}{2n} (n^2 - 3n + 2) + \frac{\theta}{t_1} \right] - \frac{f}{t_1} \dots (18)$$

$$\frac{\partial \widetilde{AP}(n, t_1)}{\partial t_1} = \frac{s}{t_1^2} - \left(\frac{a}{(\theta + b)^2} \right) (e^{(\theta + b)t_1}) \left[\frac{\widetilde{h}_1}{2n} (n^2 - 3n + 2) + \frac{\theta}{t_1} \right] + \frac{a\theta}{(\theta + b)t_1^2} (e^{(\theta + b)t_1} - 1) + \frac{f}{t_1^2} \dots (19)$$

$$\frac{\partial \widetilde{AP}(n, t_1)}{\partial t_1} = 0.$$

$$\Rightarrow s + \frac{a\theta}{\theta + b} (e^{(\theta + b)t_1} - 1) + f = \left(\frac{at_1^2}{(\theta + b)^2} \right) (e^{(\theta + b)t_1}) \left[\frac{\widetilde{h}_1}{2n} (n^2 - 3n + 2) + \theta \right] \dots (20)$$

$$\frac{\partial^2 \widetilde{AP}}{\partial t_1^2} = \frac{a\theta}{\theta + b} \left(\frac{e^{(\theta + b)t_1}}{\theta + b} \right) - \frac{2at_1}{(\theta + b)^2} (e^{(\theta + b)t_1}) \left[\frac{\widetilde{h}_1}{2n} (n^2 - 3n + 2) \right] - \left(\frac{at_1^2}{(\theta + b)^3} \right) (e^{(\theta + b)t_1}) \left[\frac{\widetilde{h}_1}{2n} (n^2 - 3n + 2) < 0 \dots (21) \right]$$

From equation (21), we know $\frac{\partial^2 \widetilde{AP}(n, t_1)}{\partial t_1^2} < 0$.

Hence $\widetilde{AP}(n, t_1)$ is a concave function in t, for fixed n.

There exists a unique value of t, such that $\widetilde{AP}(n, t_1^*)$ is the maximum value t_1^* can be determined by solving equation (20).

Substitute t_1^* and $R^* = 0$ in equation (4), the transfer quantity q_n^* can be determined for fixed n.

Case: 3 $b(p - c) - \widetilde{h}_2 > 0$.

There are three sub-cases in case 3.

$$\text{Case: 3.1 } [b(p - c) - \widetilde{h}_2]/(\theta + b)t_1 < \frac{\widetilde{h}_1}{2n} (n^2 - 3n + 2) + \frac{\theta}{t_1}$$

If $[b(p - c) - \widetilde{h}_2]/(\theta + b)t_1 < \frac{\widetilde{h}_1}{2n} (n^2 - 3n + 2) + \frac{\theta}{t_1}$, then $\frac{\partial \widetilde{AP}(n, R, t_1)}{\partial R} < 0$. It is the same as case 1. The optimal retransfer level of the item in the display area $R^* = 0$ and there exists a unique value of t_1^* such that $\widetilde{AP}(n, t_1^*)$ is the maximum value t_1^* can be determined by solving equation (15).

Substitute t_1^* and $R^* = 0$ in equation (4) and the transfer quantity $q_n^* = R$. The number of transfers from the warehouse to the display area per order n must be larger than or equal to 2.

$$\text{Case: 3.2 } [b(p - c) - \widetilde{h}_2]/(\theta + b)t_1 > \frac{\widetilde{h}_1}{2n} (n^2 - 3n + 2) + \frac{\theta}{t_1}$$

If $[b(p - c) - \widetilde{h}_2]/(\theta + b)t_1 > \frac{\widetilde{h}_1}{2n}(n^2 - 3n + 2) + \frac{\theta}{t_1}$, then $\frac{\partial \widetilde{AP}(n,R,t_1)}{\partial R} > 0$. That is, the benefit received from the unit of inventory $(p - c)/(\theta + b)$ is larger than the unit carrying cost h and AP is an increasing function of R for fixed n .

Therefore, we should pile up inventory to the maximum allowable number M .

So, $I(0) = M$. From $I(0) = M = q + R$ and equation (4), we know

$$q = [R + \frac{a}{\theta + b}](e^{(\theta + b)t_1} - 1)$$

$$\Rightarrow R = (M + \frac{a}{\theta + b})e^{-(\theta + b)t_1} - \frac{a}{\theta + b} \dots\dots\dots (22)$$

which indicates that R is a function of t_1^* . Substituting equation (22) in equation (9), we get

$$\widetilde{AP}(n, t_1) = (p - c) \left\{ a - \frac{ab}{\theta + b} + \frac{b}{\theta + b} \left(M + \frac{a}{\theta + b} \right) (1 - e^{(\theta + b)t_1}) \right\} - \frac{s}{nt_1} + \frac{a\widetilde{h}_2}{(\theta + b)} - \left(M + \frac{a}{\theta + b} \right) (1 - e^{\theta + bt_1})$$

$$\left[\frac{\widetilde{h}_1}{2n}(n^2 - 3n + 2) + \frac{\widetilde{h}_2}{(\theta + b)t_1} + \frac{\theta}{t_1} \right] - \frac{f}{t_1} \dots\dots\dots (23)$$

$$\frac{\partial \widetilde{AP}(n,t_1)}{\partial t_1} = (p - c) \left\{ -\frac{b}{(\theta + b)t_1^2} \left(M + \frac{a}{\theta + b} \right) (1 - e^{(\theta + b)t_1}) + \frac{b}{(\theta + b)^2 t_1} \left(M + \frac{a}{\theta + b} \right) (e^{(\theta + b)t_1}) \right\} -$$

$$\frac{s}{nt_1^2} - \left(M + \frac{a}{\theta + b} \right) \left(\frac{e^{(\theta + b)t_1}}{(\theta + b)} \right) \left[\frac{\widetilde{h}_1}{2n}(n^2 - 3n + 2) + \frac{\widetilde{h}_2}{(\theta + b)t_1} + \frac{\theta}{t_1} \right] + \left(M + \frac{a}{\theta + b} \right) (1 - e^{(\theta + b)t_1}) \left[-\frac{\widetilde{h}_2}{(\theta + b)t_1^2} - \frac{\theta}{t_1^2} \right] + \frac{f}{t_1^2}$$

$$\dots\dots\dots (24)$$

The second order condition is,

$\frac{\partial^2 \widetilde{AP}(n,t_1)}{\partial t_1^2} < 0$, Hence $\widetilde{AP}(n, t_1)$ is a concave function in t , for fixed n . There exists a unique value of t_1^* such that $\widetilde{AP}(n, t_1^*)$ is the maximum value t_1^* can be determined by solving equation (24).

Case: 3.3 $[b(p - c) - \frac{\widetilde{h}_2}{\theta + bt_1}] = \frac{\widetilde{h}_1}{2n}(n^2 - 3n + 2) + \frac{\theta}{t_1}$

If $[b(p - c) - \frac{\widetilde{h}_2}{\theta + bt_1}] = \frac{\widetilde{h}_1}{2n}(n^2 - 3n + 2) + \frac{\theta}{t_1}$, then we obtain

$$\tilde{t}_1 = \frac{2[b(p - c) - \widetilde{h}_2]}{(\theta + b)\widetilde{h}_1(n - 3 + \frac{2}{n})} \dots\dots\dots (25)$$

From $\frac{\partial \bar{AP}(n,R,t_1)}{\partial R} = 0$ and equation (25), the retransfer level of the item in the displayed area $R^* = R_n^*$, can be determined. However,

$\left(\frac{\partial^2 \bar{AP}(n,R,t_1)}{\partial t \partial R}\right)^2 - \left(\left(\frac{\partial^2 \bar{AP}(n,R,t_1)}{\partial t_1^2}\right)\left(\frac{\partial^2 \bar{AP}(n,R,t_1)}{\partial R^2}\right)\right) > 0$ at $(t_1^*, R^*) = (t_n^*, R_n^*)$. Hence $\bar{AP}(n, R, t_1)$ has a saddle point at $(t_1^*, R^*) = (t_n^*, R_n^*)$ for fixed n .

5. Numerical Example

Given $a = 550$ units/unit time, $b = 0.9$, $n = 4$ days, $\tilde{h}_1 = (0.7, 0.8, 0.9)$, $\tilde{h}_2 = (0.5, 0.6, 0.7)$, $c = \text{Rs. } 4$ per unit, $p = \text{Rs. } 5$ per unit, $M = 450$ units, $s = \text{Rs. } 50$ per unit, $f = \text{Rs. } 10$ per transfer and $\theta = 10\%$. Find the optimum replenishment cycle time in the display area, optimum replenishment cycle time in the warehouse area, optimal replenishment level, quantity per transfer from the warehouse to the display area, order quantity, and average profit are determined.

Sol:

5.1 Optimum replenishment cycle time in the display area:

$$\tilde{t}_1 = \frac{2[b(p-c) - \tilde{h}_2]}{(\theta + b)\tilde{h}_1\left(n - 3 + \frac{2}{n}\right)}$$

$$\tilde{t}_1 = (0.2963, 0.5, 0.7619)$$

By graded mean integration method,

$$p(t_1) = 0.5097$$

5.2 Optimum replenishment cycle time in the warehouse area:

$$T = n\tilde{t}_1$$

$$T = 2.0388$$

5.3 Optimal replenishment level:

$$R = \left(M + \frac{a}{\theta + b}\right) e^{-(\theta + b)\tilde{t}_1} - \frac{a}{\theta + b}$$

$$R = 50.6758$$

5.4 Quantity per transfer from the warehouse to the display area:

$$q = [R + \frac{a}{\theta+b}] (e^{(\theta+b)\tilde{t}_1} - 1)$$

$$q = 399.3243$$

5.5 Order quantity:

$$Q = \frac{nq}{\theta}$$

$$Q = 15972.972$$

5.6 Average profit:

$$\widetilde{AP} = (p-c) \left\{ a - \frac{ab}{\theta+b} + \frac{bq}{(\theta+b)t_1} \right\} \frac{s}{nt_1} + \frac{a\tilde{h}_2}{(\theta+b)} - q \left\{ \left[\frac{\tilde{h}_1}{2n} (n^2 - 3n + 2) + \frac{\tilde{h}_2}{(\theta+b)t_1} - \frac{\theta}{t_1} \right] \right\} \frac{f}{t_1}$$

$$\widetilde{AP} = (14.2572, 177.5539, 340.8507) =$$

By graded mean integration method,

$$p(AP) = 257.9345$$

6. Sensitivity Analysis

Table 1:

S.No	n	t	T	R	q	Q	AP
1.	4	0.5097	2.0388	50.6758	399.3243	15972.972	257.9345
2.	5	0.3186	1.5930	177.1664	272.8337	13641.6850	231.5743
3.	6	0.2294	1.3764	245.0105	204.9895	12299.3700	210.4913
4.	7	0.1784	1.2488	286.6077	163.3923	11437.4610	191.9878
5.	8	0.1457	1.1656	314.4170	135.5830	10846.6400	177.7870
6.	9	0.1187	1.0683	338.0742	111.9258	10073.3220	164.4551

7. Conclusion

In this paper, we develop an optimum replenishment cycle time in the display area, optimum replenishment cycle time in the ware house area, optimal replenishment level, quantity per transfer from the warehouse to the display area, order quantity, and average profit in the fuzzy sense. Holding cost in the display area and holding cost in the warehouse area is taken as triangular fuzzy numbers. Here we acquire the defective items in terms of percentage. This model is solved analytically to calculate the average profit. Finally, the proposed model has been verified by the numerical example along with the sensitivity analysis. By the above table, if the number of transfers is increased then the order quantity is decreased. From this we conclude that, minimize the number of transfer more the order quantity. In the future study, we apply the fuzzy concept for all provisions in this predictable model.

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AN ANALYTICAL STUDY ON JOB SATISFACTION OF EMPLOYEES RECRUITED IN MUNICIPAL CORPORATION OF MAHARASHTRA

Dr. Suresh D Gawali
Assistant professor & Head
Department of Commerce & Management
Jagadamba Mahavidyalaya Achalpur City

Abstract:

The study would also elaborate on job satisfaction conducted by municipal corporations and the purpose behind this is to put down a frame work that will actually enable us to find the drawbacks in the existing job satisfaction methods. The result of the study would be better quality intake of employees. This would also help the HR manager to improve the job satisfaction. This will also boost the employees and will motivate them. The employees will also be capable to face future difficulties and competitions.

The core of management functions lies in the actual guiding, directing and even controlling of the efforts made of the employees in an organization. Without the effort of human being, even resources like material, machine and money would also remain meaningless. To achieve the basic objective of an organization, effective and efficient use of human resource is essential. Otherwise raw material will remain unused, machine will stand idle and money will not serve any purpose. Human resource management is a function of management with the primary objective of ensuring that every employee makes his fullest contribution to the achievement of the objectives of business. It is that part of general management which is especially concerned with the people employed in an organization.

Key words: Efficiency, Satisfaction, Effectiveness, Motivation.

Introduction:

As a general concept, satisfaction may be explained in a behavioral perspective. Individual or organizational behavior is believed to be goal directed. Each human action has a primary motivation and most actions are attempts to maximize satisfaction by fulfilling multiple motivations, some of which are identified by Maslow (Maslow, 1943). Accordingly the meaning of satisfaction in common usage, satisfaction happens when one gets what he needs, desires, wants, expects, deserves or deems to be his entitlement.

According to Hoppock (1935), "Job satisfaction is any mixture of psychological, physiological and environmental circumstances that cause a person truthfully say I am satisfied with my Job". Such an explanation indicates the variety of variables that persuade Job satisfaction. Blum (1968) defined Job satisfaction as "an attitude which results from a balancing and summation of many specific likes and dislikes experienced in connection with the Job". Vrom (1964) finds that Job satisfaction is, "the positive orientation of an individual towards all aspect of the work situation".

Locke (1969) explained Job satisfaction as a “pleasurable or positive emotional state resulting from the appraisal of one’s or Job experiences”.

Job Satisfaction and Attitude towards Job

Attitude represents an unrelenting tendency to feel and behave in a particular way towards various objects. Attitudes are not learned. They are acquired from various sources, the more important of them being direct experience with the object, associating one object with another about which an attitude had already been formed from Family and peer groups, from the neighborhood, economic status and occupations and mass communications. Job satisfaction refers to a person’s feelings towards his Job.

Job Satisfaction and Attraction towards Job

The concept of Job satisfaction applies only to the outcome already gained by an individual whereas Job attraction is concerned with hedonism of the future”.

There are 3 important dimensions to Job satisfaction.

1. Job satisfaction refers to one’s feelings towards one’s Job. It can only be surmised but not seen.
2. Job satisfaction is often determined by how well outcomes meet or exceed expectations. Satisfaction in one’s Job means increased commitment in the fulfillment of formal requirements. There is greater willingness to invest personal energy and time in Job performance.
3. The terms Job satisfaction and Job attitudes are typically used interchangeably. Both refers to effective orientation on the part of individuals towards their work roles which they are presently occupying. Positive attitudes towards the Job are conceptually equivalent to Job satisfaction and negative attitudes towards the Job indicate Job dissatisfaction.

How To Measure Job Satisfaction

There are a number of ways to measure Job satisfaction. The most ordinary ways of measurement include rating scales, critical incidents, interviews and action tendencies.

Various Rating Scales

The most common approach for measuring Job satisfaction is the use of various rating scales. These scales fall into two different categories. One is called factor made scales, which are constructed for a particular setting or a project. The second set comprises standardized scales which, before their use, have been developed to establish group norms on the scales and to ensure reliability and validity of the measuring instruments. It is the tailor made scale which is frequently used in practice.

1. Job Descriptive Index
2. Minnesota Satisfaction Questionnaire (MSQ)
3. Critical Incidence
4. Interview

5. Action Tendencies

The various theories of Job satisfaction are subsumed under two categories namely content theories and process theories. The former category emphasizes the specific factors which motivate the individual towards Job, while the latter category deals with dynamics of this motivational process. Even though doubts were raised against these theories they represent foundation for the development of later theories. So any discussion of Job satisfaction will be incomplete and inadequate if a glance at the contributions of the important theorists is not made.

1. Abraham Maslow's Need Hierarchy Theory (1943)
2. Clayton Alderfer's ERG Theory (1969)
3. Frederick Herzberg's Two Factor Theory (1959)
4. Douglas McGregor's Theory X and Theory Y
5. David McClelland's Needs Theory .

Review Literature:

As per in the year 1991, Balgir tried to understand hygiene-motivational factors as postulated by Herzberg based on their need priorities that control the minds of Indian Managers while doing service in their respective Organizations. The results explained that Job Satisfaction, Salary, Job Security, Better Chances of Promotion, Happy Personal Life, High Position And Friendly Social Circle are few of the motivating factors in that order which robustly influence Indian Managers.

According to in the year 1992, Dhar and Jain underwent an investigation amongst academicians. The investigation discovered the nature of relationship between Job Satisfaction, Job Involvement, Age and Length of service. An important finding of this study was such that Job Involvement and Job Satisfaction are positive correlates with each other which shows that involvement in Job increases the level of Job Satisfaction and vice-versa.

As per in 2004, Sarri and Judges, provided greater understanding of the research on employee's attitudes and Job Satisfaction. Their article identified three gaps between Human resource practice and the scientific research in the area of employee attitudes in general and the most crucial employee attitude in particular –Job satisfaction: the causes of employee attitudes, the result of positive or negative Job satisfaction and how to measure and influence employee attitudes. Suggestions for practitioners were provided on how to close the gaps in knowledge and for evaluating implemented practices.

According to Santhapparaj, et.al., in the year 2005, evaluated the Job satisfaction of the women managers working in automobile industry in Malaysia based on primary survey of 200 woman managers. The result demonstrated that female managers were generally satisfied with their Job. Highest level of satisfaction happens in the areas of supervision, Job in general, and presents Job and present pay. However, relatively large numbers of women managers were unhappy with their co-workers, pay and present Job. The correlation analysis demonstrated that there was a significant negative correlation between age, education and various Job factors that determine the Job satisfaction.

Objectives of the study:

1. To assess the relationship between the Place of the Job and Job Satisfaction of the employees of Municipal Corporations of Maharashtra
2. To know the employee satisfaction level towards the organization and the relationship within.
3. Employee satisfaction is considered as a key issue by the organization where efforts are need to be taken.
4. To assess the relationship between the Annual Income and Job Satisfaction of the employees of Municipal Corporations of Maharashtra
5. The study will help to improve the efficiency and working skills of the employees of the Municipal Corporations.

Hypothesis

- There is no significant difference in the Job Satisfaction among the employees, having different Length of Services, of various Municipal Corporations

Research methodology:

Research Methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically. In it we study the various steps that are generally adopted by researcher in studying his research problem along with the logic behind them.

This study primarily deals with Job satisfaction among Employees of Municipal Corporations in Maharashtra. The study focuses on identifying various factors affecting satisfaction of Employees of Municipal Corporations in Maharashtra.

Research Design:

A research design is a master plan specifying the methods and procedures for collecting and analyzing the needed information. It is a framework or blueprint that plans the action for the research work.

“A research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure.”

Data Collection Methods:

The data is the raw material with which the foundation of subsequent analysis and statistical interpretation is firmly laid.

The data is of two types:-

- **Primary Data, and**
- **Secondary Data**

Primary Data collection:

There are several methods of collecting primary data. Important methods are

1. **Observation method**
2. **Interview Method**
3. **Through Questionnaires**
4. **Through Schedules.**

Secondary Data:

Secondary data is data collected by someone other than the user. Common sources of secondary data for social science include censuses, surveys, organizational records and data collected through qualitative methodologies or qualitative research. Primary data, by contrast, are collected by the investigator conducting the research.

Secondary data analysis saves time that would otherwise be spent collecting data and, particularly in the case of quantitative data, provides larger and higher-quality databases than would be unfeasible for any individual researcher to collect on their own. During this research, the researcher used the various research papers, articles & relevant websites, earlier theses etc. Data from various sources were analyzed & used in this study.

Data Analysis & Interpretation:

Analysis and interpretation are giving meaning to the collected information by comparing them with the existing information.

The statistical tools used in this study are

1. **Tabulation:** The table for the demographic distribution for collecting the samples as per the criteria under the Objectives of this study.
2. **Reliability Test Analysis :** Cronbach's alpha reliability test is used to check the internal consistency of items under consideration of a subject.
3. **Validity Test Analysis :** Data preprocessing is performed to check any outliers falling beyond 1-5 rating against each factor response and to fill the missing values of the responses by using KNN technique.
4. **Co-linearity test :** As to identify the relationship between the various parameters and their total effect by using bi-variate correlation.
5. **Descriptive Analysis :** Graphical tools of bar charts are used to identify the trend on each item under consideration.
6. **Inferential Analysis :** Hypothesis testing is conducted using Independent T test for given six different scenarios viz. Gender, Marital status, Caste, Home town effect, Age and Service length .

Statistical Analysis

Step 1:

Tabulation: The tables for the demographic distribution reflect the sample to be collected as per the criteria under the Objectives of this study. This fair distribution helps in performing the hypothesis testing considered under this study.

Step 2:

Reliability Test Analysis : The 5 point Likert's scale is used to collect the responses where every Likert's item is given the weights: 1-Strongly agree, 2-Agree, 3-Neither agree nor disagree, 4- Disagree and 5-Strongly disagree.

To test the reliability of the format design a pre survey test is necessary before executing the overall study. For this, Cronbach's Alpha Reliability test is performed on the designed 5 different parameters i.e. Working environment, Seniors/Superiors reporting authorities, Co-worker co-operation, Promotion and Pay. 20 samples of Municipal Corporations employees each form both Eastern Maharashtra region as well as Western Maharashtra region were tested. Cronbach's Alpha reliability co-efficient normally ranges between 0 and 1, however' there are actually no lower limit to the co-efficient. The closer Cronbach's Alpha co-efficient is to 1.00, the greater the internal consistency of the items in the scale. Cronbach's Alpha is calculated by following formula:

$$\alpha = \frac{k}{k-1} \left(1 - \frac{\sum_{i=1}^k \sigma_{Y_i}^2}{\sigma_X^2} \right)$$

Where : K= number of different items administered to each subject.

$\sigma_{Y_i}^2$ = Variance of different items administered to each subject.

σ_x^2 = Variance of total raw scores of each sample respondent.

George & Mallory (2003) provides the following techniques: If α is

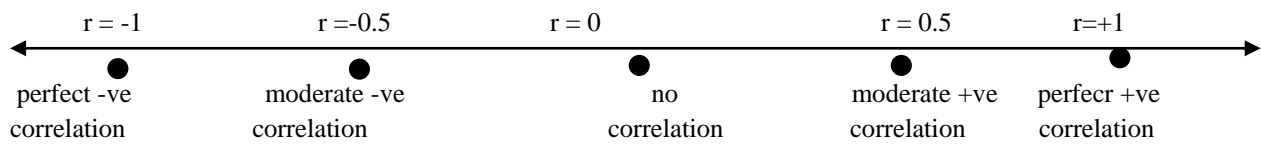
- a. > 0.90 = Excellent
- b. $0.80 - 0.89$ = Good
- c. $0.70 - 0.79$ = Acceptable
- d. $0.60 - 0.69$ = Questionable
- e. $0.50 - 0.59$ = Poor
- f. < 0.50 = Unacceptable

Step 3:

Validity Test Analysis : After passing the above test the overall study can be conducted where the data is then compiled in the required format. Data preprocessing is performed to check any outliers falling beyond 1-5 rating against each factor response and to fill the missing values of the responses by using KNN technique. After the completion of data preprocessing an equal justice can be examined for each factor under consideration for the two samples sets i.e. employees' of Eastern Maharashtra region containing set of 120 samples. Similar set of 120 samples of employees' of Western Maharashtra region working under the respective Municipal Corporations offices.

Step 4:

Co-linearity test : As to identify the relationship between the various parameters and their total effect by using bi-variate correlation is used. The Bivariate Co-linearity test identify any duplicity among the 5 parameters which reveal their dependency. The Karl Pearson's correlation coefficient r is used to determine this test. The following figure reflects the inference of the coefficient values.



Step 5:

Descriptive Analysis : Based on the percentage of the 5 point Likert's scale a graphical representation can provide a clear amount of percentage which agrees the fact under consideration. The comparative results under the two regions of Maharashtra state i.e. Eastern Maharashtra and the Western Maharashtra; can also be tabulated to determine the facts numerically.

Step 6:

Inferential Analysis : The responses under each of the 5 parameters were added. A new parameter named as Total Job satisfaction is the grand total of all the total 28 variables under consideration. To study the support of the 6 facts under consideration viz Working environment, Seniors/Superiors reporting authorities, Co-worker co-operation, Promotions, Pay and the Total Job Satisfaction, Independent Two sample t- test is carried out for both the regions under Maharashtra state.

Statistically we test null hypothesis $H_0 : \mu_1 = \mu_2$ (There is no significant difference between the means of the demographic variable for the two regions under the Maharashtra state).

vs the alternative hypothesis $H_1: \mu_1 \neq \mu_2$ (There is some significant difference between the means of the demographic variable for the two regions under the Maharashtra state). The demographic variable under the testing are sub-divided. For example under gender :males of Eastern Maharashtra region are tested against males of West Maharashtra region. Similarly testing is performed for females too.

SPSS Table:

The Independent sample T test using SPSS tool provides Two table. First table provide group statistics in which sample size, mean, std deviation and std error are provided. The sample size clearly indicates the test size as per the demographic distribution table.

Using the second table, the 5th column of Sig (2 tail test) provides the p. value which depends on the sig p value of the second column. If their p value is >0.05 (no difference) consider the first sig value otherwise consider the 2nd sig value of the 5th column. We can set the following rules at 5% level of significance :

If p value >0.05 , then the model is non-significant model and supports the statement of the null hypothesis. This means, there is no significant difference between the means of the demographic variable for the two regions under the Maharashtra state. Hence, they support the fact under null hypothesis.

If p value ≤ 0.05 , then the model is significant model to determine the statement of alternative hypothesis. This means, there is some significant difference between the means of the demographic variable for the two regions under the Maharashtra state . Hence they support the fact under alternative hypothesis.

Step 7:

Using the interpretations determined in inferential analysis an overall conclusion is drawn as to support the hypothetical statement under consideration.

Length of service

Length of service	East Maharashtra			West Maharashtra		
	Male	Female	Total	Male	Female	Total
Below 10 years	14	07	21	14	12	26
10 years to 20 years	15	15	30	11	15	26
20 years to 30 years	37	09	46	34	15	49
30 years & above	17	06	23	10	09	19
Total	83	37	120	69	51	120

Conclusion:

There is significant difference in the Job Satisfaction of the employees having their length of service below 20 years working in various Municipal Corporations of Eastern Maharashtra and Western Maharashtra. There is no significant difference in the Job Satisfaction of the employees having their length of service above 20 years working in various Municipal Corporations of Eastern Maharashtra and Western Maharashtra. There is significant difference in the Job Satisfaction of the employees having their length of service below 20 years working in various Municipal Corporations of Eastern Maharashtra and Western Maharashtra. On the other hand, Employees having their service length above 20 years reflect reverse response as compared to their junior Employees. We can conclude that there is no significant difference in the Job Satisfaction of the employees having their length of service above 20 years working in various Municipal Corporations of Eastern Maharashtra and Western Maharashtra.

Recommendations

On the basis of the present study, following recommendations are made

- It was observed during this study that, there is a lot of political pressure on Corporations employees which leads to Job dissatisfaction among them. It is suggested that the political pressure/disturbance may be minimized in order to improve the performance of employees.
- There is biased environment for the women employees in the Corporations. Such things affect the work environment & Job satisfaction. Equal treatment should be given to both the genders of employees.
- Most of the employees perform well in their home town. Although there are service conditions under which they are transferred to other parts of Maharashtra. However, Job satisfaction & work performance improve when the person is working in his/her hometown.

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IMPACT OF PARENTING STYLES ON THE ACADEMIC ACHIEVEMENT OF THE CHILD

Anjali Yadav

Msc(Chemistry), M.Ed UGC.

Net (Education) Research Scholar

(Education) J. S. University.

ABSTRACT

Parenting style alludes to the path in which guardians bring up their children. The way that individual parent is an imperative consider their children socio-enthusiastic development and advancement. Various studies observed there are mainly two essential components that assistance shape effective Parenting: parental responsiveness and parental demands. Parenting styles distinguished in three ways: legitimate Parenting, dictator parenting, and tolerant Parenting.

Various studies developed three unique Parenting styles by including the uninvolved or careless style, which has the most inescapable negative outcomes over all areas. While not each parent falls perfectly into one classification, these Parenting styles for the most part relate with the sort of teach a parent utilizes with his or her tyke or children.

Guardians are the fundamental column and the first of child's identity improvement. The nature of the connection amongst guardians and youngsters is considered as the deciding variable of alteration and their cooperation to each different and in addition mental and passionate airs overwhelming on the family frame the behavioral and identity qualities of children. The current paper highlights the role of parenting styles in the academic achievement of the child.

KEYWORDS:

Parenting style, Academic, Achievement, Children

INTRODUCTION

The issue of socialization has been drilled on individuals by different sources and everyone makes up the social and social identity of the mingled one. Family assumed the fundamental part in many social orders, including Iran among this and it has the most impact during the time spent human's socialization and cultural assimilation.

Different studies have been performed demonstrating that a standout amongst the best components on the improvement and arrangement of pre-adult's identity is their parent's parenting practices. Parenting styles are designs for children preparation that is framed by the regularizing connection of guardians and how they reaction to children' academic achievement. Moreover, different investigations demonstrated the connection between five identity qualities including learning styles, scholarly accomplishment and emotional wellness which show the significance of tending to this territory.

Clinicians are unique in relation to each other regarding the significance of identity. The majority of them concur that the term identity is a moderately stable attribute, propensities or elements that propagate person's conduct to some degree; or more particular, identity is comprised of characteristics and inclinations which are directed to singular contrasts in conduct, conduct security after some time and conduct congruity in different circumstances.

Many investigations have reported that Parenting has a capable impact in academic achievement of the children and is frequently connected with tyke results including school-significant results. Parenting styles can be portrayed as examples of conduct that essential guardians use to connect with their children. These examples of childrearing make an enthusiastic atmosphere in which the parent's practices are communicated. In line with this, the studies research about influence of parenting styles on the academic achievement of the children.

Today, many parents gripe about the identity and the conduct of their children without understanding that their children rearing style is the principle purpose for the children's undesired conduct which can influence their academic results.

In opposition to regular convictions 'qualities has nothing to do with conduct' yet it's the way parents bring up children that influence their identity. Child rearing is a perplexing undertaking that incorporates numerous particular practices that work independently and together to impact child's academic achievement.

Family is the principle column and the first of children's progress. The nature of the connection amongst parents and youngsters is considered as the deciding component of change and their association to each different and additionally mental and enthusiastic climate predominant on the family shape the academic achievement attributes of children.

IMPACT OF PARENTING STYLES ON THE ACADEMIC ACHIEVEMENT OF THE CHILD

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Different investigations have been performed showing that a standout amongst the best factors on the advancement and arrangement of juvenile's identity is their parent's children rearing practices.

Thusly, the present examination inspects the connection between children rearing styles and identity measurements. Parental demandingness is the degree to which parents set rules for their youngsters, and how their academic practices is based.

Parental responsiveness is the enthusiastic normal for children's academic achievement. Responsiveness passes on to how much parents bolster their youngsters and go to their children' needs. Both children rearing responsive and requesting has been connected to secure connection in children.

One essential assignment of children's academic achievement is the socialization of children. This errand requires parental desires and direction that change with the improvement of the children to support positive academic results. The socially capable youngster can be depicted as having freedom, social obligation, force, and accomplishment introduction, which is the drive to look for scholarly difficulties and take care of issues productively and with diligence. Development of emotional and behavioral self-regulation of a child is highly influenced by parental attitude. The capacity to control emotional responses depends on the level of response and involvement of parents in a child's life. For example, parents act as a resource for their child in social referencing. When a child is placed in a fear-inducing situation, if a parent is present, the child will look toward the parent and examine facial expressions. If the parent does not show emotional distress, then the child will display less distress and more engagement in the situation.

Not only the emotional and behavioral progress throughout each form of psychosocial development, have parents played a vital role in the positive growth of their child. Parents who influence the development of their child in a positive manner tend to have particular qualities and characteristics. These parents tend to be responsive, demanding, accepting and emphasize discussion and interaction. These parents have the characteristics of an authoritative parent.

Past studies showed that authoritarian parenting is related low academic achievement. This means that parents with too high or too low demand and responsiveness have children with low academic achievement. Past studies have established a positive correlation between authoritative parenting style and academic achievement.

The current study intends to investigate the relation of parenting style on children's academic performance. Specifically, this research would like to know if these different parenting styles have any effect on children's academic performance. It is expected that present study would be helpful to all of the students because every student belongs in a family. So, parenting style has an important role on student's academic activities. If we can identify the relation of parenting style with students' academic performance and which parenting style is effective in high academic performance, it will be possible to inspire parents in that kind of parenting style.

It is especially important that parents give children a good start, but it's also important for parents to recognize that kids come into the world with their own temperaments, and it is the parents' job to provide an interface with the world that eventually prepares a child for complete independence. In a rapidly changing world parenting seems subject to fads and changing styles, but the needs of child.

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DISCUSSION

In a rapidly changing world parenting seems subject to fads and changing styles, but the needs of child Family as well as parents are considered as an indispensable support system available to any child and seem to play a significant role in the development of the child. Although, the significance of home environment in the developmental of the child cannot be ignored, yet the strongest factor influencing the development of the child is, the style used by parents for their child's rearing.

“Academic performance of school students depends on parenting styles along with other conditions i.e. parents being responsive (supportive and warm), demanding (controlling and supervising) and guidance given to the students towards their academic performance.” Moreover, it is the duty of parents to provide proper nutrition, safe environment and guidance to their child to prepare them to fulfill the demands of lifelong learning.

Family as well as parents are considered as an indispensable support system available to any child and seem to play a significant role in the development of the child. Although the significance of home environment in the developmental of the child cannot be ignored, yet the strongest factor influencing the development of the child is, the style used by parents for their child's rearing.

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In the present competitive era, when every parent wants their child to perform well in each and every field of life, it is very much important to understand the effect of different parenting styles on the child's development including his academic achievement.

CONCLUSION

Parenting style has substantial effect on children's development. It was found that parenting style had a significant effect on academic achievement of senior secondary school students. So, parents must be made aware of their contribution in children's life domain. It was further found that students who perceived their parents' parenting style as democratic demonstrated high academic achievement.

Hence, parents must adopt democratic parenting style and must use it practically while dealing with their children. They must encourage their children to participate in activities that match their talents and also to work hard by being genuinely interested in their activities.

Understanding the importance of parenting style in the life of children, schools and administrators should organize workshops and trainings for parents to guide the parents about the various strategies which they should use for their child's development.

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CHILDHOOD, A FUNDAMENTAL RIGHT: LAW AND IRONY

Prem Kumar¹

1. Introduction

No one knows who created mankind on this planet but “Mankind” as we know, begins with childhood. There is life as blooms from each pinnacle of Mother Nature, seen or unseen, tangible or intangible but it manifests in different nascent forms giving pleasant surprises. A child is born as a gift from nature to Mankind. Great Poet *William Wordsworth* said “*Child is the father of man....*” It sounds paradoxical; however it might mean that if childhood is nurtured in heart, our inner child dictates all the great and wonderful things that we find in life. But, if that ‘inner child’ is killed in childhood itself, the grown up will become unsocial and may be a dent on Mankind. *An adult is the product of the habits, manners and behavior that he inculcated during his childhood.* Then, who is responsible of killing ‘inner child’ in our children and if that can be prevented, it will provide a wholesome solution of many of present problems the Nations are facing today. Then questions arise, how and by what means. In that process, every effort would rest either on social participation or on legal intervention.

Though, much has been written on the issue being an issue needs prime consideration to secure an idle and disciplined society, however, I have concentrated with my best of ability to identify the root causes of the problem and aspect of effectiveness of present laws of the land on the issue and legal intervention. Basic issue is, whether ‘childhood’ is a fundamental right of children or it is at the disposal of common law and the will of society.

Present laws in India deal only the crimes against children, which turns out ultimately to be the matter of statutory rights. Hon’ble Apex Court in *Maneka Gandhi’s case* has expressed thus;

“The theory that a peripheral or concomitant right which facilitates the exercise of a named fundamental rights or gives its meaning and substance or makes its exercise effective, is itself a guaranteed right included within the named fundamental right cannot be accepted..... Where a statutory provision empowering an authority to take action is constitutionally valid, action taken under it may offend a fundamental right and in that event, though the statutory provision is valid, the action may be void. Therefore, even though section 10(3)(c) is valid, the question would always remain whether an order made under it invalid as contravening a fundamental right..... It is true that in a proceeding under Article 32 of the Constitution, we are only concerned with the enforcement of fundamental constitutional rights and not with any statutory rights apart from fundamental rights.”¹

Thus, a statutory right empowers an authority to take action only if violation of any statutory provision is found in a particular case but such protection is insufficient to ensure certain basic rights at large, related to children. Apart, doors of Article 32 are open only for enforcement of rights conferred by Part-III of the Constitution and not statutory rights.

¹ Research Scholar, (Ph.D. in Law), Tanta University, Sri Ganganagar, (Raj.)

2. Shocking Data - Present Scenario

India with 1.21 billion people constitutes as the second most populous country in the world, while children represents 39% of total population of the country. The figures show that the larger number of about 29 per cent. constitutes children in the age between 0-5 years. Uttar Pradesh (19.27%) is the State with highest children's population in the country, followed Bihar, Maharashtra, West Bengal and Madhya Pradesh constitutes 52% of children's population in the country.²

In our country, crime against children starts even before birth. The strong preference for sons under patriarchal traditions and the availability of inexpensive prenatal diagnostic techniques have resulted in an increased use of prenatal gender tests in India, even among the rural poor. The Government of India has also enacted *Pre natal Diagnostic Techniques Act of 1994* and the *Medical Termination of Pregnancy Act of 1971* was enacted by the Government of India with the object of reduction in the incidence of illegal abortion and consequence maternal mortality and morbidity.

The Indian Penal Code (Act No. 45 of 1860) provides an exception and permits abortion only when it is justified for the good faith purpose of saving the life of the woman.

In many parts of India, daughters are not preferred and hence sex-selective abortion is commonly practiced, though being illegal in India. To address the same, some statutes provide certain benefits to unborn child, resulting in an unnatural male to female population sex ratio due to millions of developing girls selectively being targeted for termination before birth.

Sections 312 to 316 of the Penal Code provided that any person performing an illegal abortion was subject to imprisonment for three years and/or payment of a fine; if the woman was "quick with child", the punishment was imprisonment for up to seven years and payment of a fine.

Girl child neglect was assessed comparing to her brothers on factors like attention, food, recreation time, household work, taking care of siblings, etc. 70.57% of girls reported having been neglected by family members. 48.4% of girls wished they were boys.³

In 2007, the Ministry of Women and Child Development (MWCD) released a study report on child abuse. The report discusses incidence of child abuse nationwide. Children between the ages of 5-12 are at the highest risk for abuse and exploitation. It is estimated that 150 million girls and 73 million boys under 18 have been subjected to forced sexual intercourse or other forms of sexual violence. In 2002 there were 53,000 reported cases of child homicide. ILO estimates show there were 218 million child laborers in 2004, out of which 126 million were engaged in hazardous work.

Every two out of three school children reported facing corporal punishment.

Child abuse in India is often a hidden phenomenon especially when it happens in the home or by family members. Focus with regards to abuse has generally been in the more public domain such as child labour, prostitution, marriage, etc. Intra-family abuse or abuse that takes place in institutions such as schools or Government homes has received minimal attention. This may be due to the structure of family in India and the role children have in this structure. Children in India are often highly dependent on their parents and elders; they

continue to have submissive and obedient roles towards their parents even after they have moved out of their parental home. This belief that parents and family are the sole caretaker of the child has proved to have negative effects on child protection laws and strategies. Numbers of cases of child abuse in the home are hard to attain because most of these crimes go unreported. Societal abuses that are a result of poverty such as malnutrition, lack of education, poor health, neglect, etc. are recognized in various forms by the Indian legal system. But India does not have effective law that protects children against abuse in the home. Mal-treatment of care givers has the potential to emotionally and mentally harm children to a very different degree. Studies in intra-familial child abuse in the US have shown correlation to delinquency, crime, teenage pregnancy, and other psycho-social problems.

The study of the *MWCD* found a wide spread incidence of child abuse in juvenile justice institutions, 70.21% of children in conflict with law and 52.86% of children in need of care and protection reported having been physically abused. The study found that 69% of children reported to have been physically abused. Out of these 54.68% were boys. 52.91% of boys and 47.09% of girls reported having been abused in their family environment. Of the children who were abused in family situations 88.6% were abused by their parents.

With regard to child labour, 50.2% of children work all seven days of the week. 81.16% of the girl child labourers work in domestic households, while 84% of the boy child labourers worked in tea stalls or kiosks. 65.99% of boys and 67.92% of girls living on the street reported being physically abused by their family members and other people.

The study examined emotional abuse and girl child neglect. The study examined two forms of emotional abuse: humiliation and comparison. Half the children reported facing emotional abuse with 83% of that abuse begin conducted by parents.

In 2002 there were 53,000 reported cases of child homicide.

3. Rights of a Child

The history of children's rights dates from the 19th century. Prior to that, there were no particular mechanisms in place to protect children. In ancient times and up to the middle Ages, in some parts of the world, parents even had the power of life or death over their children.

(a) 19th century :

The 19th century marked the start of children's rights. The child began to be considered as a being in need of protection. For the first time in Europe, laws were passed governing child labour. Different legal texts progressively encouraged or made education obligatory for young children, and society recognized the fact that the child could not be dealt with in the same way as an adult.

(b) 20th century: children become subjects of rights

The history of children's rights accelerated in the 20th century. In 1919, the League of Nations created a committee for the protection of children. Five years later, it adopted *the Geneva Declaration, first international treaty on children's rights, inspired by the work of jonusz korczak*, who is considered to be the father of children's rights.

After the *Second World War*, the history of children's rights underwent several key stages following the creation of the **United Nations**:

- 1948: Universal Declaration of Human Rights, which stipulates that motherhood and childhood are entitled to special care and assistance.
- 1959 : The UN adopted the *Declaration of the Rights of the Child*, which recognized the child as subject of rights.
- 1989 : On November 20, *the Convention on the Rights of the Child (CRC) was unanimously adopted by the United Nations General Assembly.*

(c) 21st century: towards an effective application of children's rights?

- 2000: Strengthening of the CRC with the adoption of two optional protocols on the sale of children, child prostitution and child pornography, and child involvement in armed conflicts.
- 2011: Adoption of a third optional protocol, introducing a mechanism by which children may submit complaints to the Committee on the Rights of the Child.
- 2014: The 25th anniversary of the Convention. It has now been ratified by 193 member States of the United Nations. Only the United States and Somalia, who have both signed the treaty, have not ratified it.

The four guiding principles of the Convention on the Rights of the Child are: Non-discrimination priority given to the best interests of the child, Right to life, survival and development, Respect for the views of the child. Beyond these principles, UNCRC recognizes following rights of children:

The right to an identity (Articles 7 and 8) -

All children have the right to a name and nationality from birth, ensuring his protection and support by his own country. If the birth is not registered, the child will not be recognized by the State and will not receive care or education.

The right to health (Articles 23 and 24) -

All children should be cared for if sick, be well-fed, protected from drugs, and enjoy living conditions which are not dangerous to their health.

The right to education, (Article 28) -

All children have the right to an education and access to skills which will help them prepare for their future.

The right to a family life (Articles 8, 9, 10, 16, 20, 22 and 40) -

All children have the right to live with people who love and care for them, preferably their families, or by caregivers if their own families cannot look after them.

Right to be protected from violence (Articles 19 and 34) -

Each child must be protected from violence, from his own family or any person who wishes to harm him. He should never be obliged to suffer or inflict ill-treatment or any act of sexual or physical violence.

The right to an opinion (Articles 12 and 13) -

All children have the right to express their views. They also have the right to be informed and give their opinion about the world around them.

The right to be protected from armed conflict (Articles 38 and 39)-

All children must be protected from war and its consequences, such as being a refugee, injured, prisoner, or forced into armed conflict.

The right to be protected from exploitation (Articles 19, 32, 34, 36 and 39) - A child should not be obliged to work in difficult or dangerous conditions, in order to survive or support his family.

The right to equality and respect for differences. Each child has the same rights, regardless of his race, colour, religion, language or culture, gender, or abilities.

4. Indian Scenario

In India, unfortunately, there are no fundamental rights specific to children framed in our Constitution but are presumed to be covered by the fundamental rights otherwise available in Part III to citizens in general. They are abandoned. They do not get a chance to step in a school. They are left to fend for themselves on the streets. They suffer from many forms of violence. They do not have access to even primary healthcare. They are subjected to cruel and inhumane treatments every day. They are children - innocent, young and beautiful - who are deprived of their rights.

In 2014 Nobel Peace Prize awardees—*Ms. Malala Yousafzai* and *Mr. Kailsh Satyarthi* have reminded us all of the need to keep on advancing in providing opportunities that has an important effect on all children. The opportunities are meant to be meaningful enough to allow them to learn and gain the mindsets and skills that would empower them to be free, develop themselves, their communities and the world.

5. When a Human ceases to be a 'Child'

Infact, defining what age a person is or ceases to be a child is a constant debate in the India. The *Census of India* considers children to be any person below the age of 14. Biologically 'childhood' is the stage between infancy and adulthood. According to the UNCRC, '*a child means every human being below the age of eighteen years unless, under the law applicable to the child, majority is attained earlier*'. This definition of child allows for individual countries to determine according to the own discretion the age limits of a child in their own laws. But in India various laws related to children define children in different age limits.

The *Indian Penal Code, 1860* finds that no child below the age of seven may be held criminally responsible for an action (Section 82, IPC). In case of mental disability or inability to understand the consequences of one's actions the criminal responsibility age is raised to twelve years (Section 83, IPC). A girl must be of at least sixteen years in order to give sexual consent, unless she is married, in which case the prescribed age is no less than fifteen. With regard to protection against kidnapping, abduction and related offences the given age is sixteen for boys and eighteen for girls.

According to Article 21-A of the Constitution, all children between the ages of six to fourteen should be provided with free and compulsory education. Article 45 states that the State should provide early childhood care and education to all children below the age of six. Lastly Article 51 (k) states the parents/guardians of the children between the ages of six and fourteen should provide them with opportunities for education.

The *Child Labour (Prohibition and Regulation) Act, 1986* defines a child as a person who has not completed fourteen years of age. The *Factories Act, 1948* and *Plantation Labour Act, 1951* states that a child is one that has not completed fifteen years of age and an adolescent is one who has completed fifteen years of age but has not completed eighteen years of age. According to the *Factories Act* adolescents are allowed to work in factories as long as they are deemed medically fit but may not for more than four and half hours a day. The *Motor Transport Workers Act, 1961*, and *The Beedi and Cigar Workers (Conditions of Employment) Act, 1966*, both define a child as a person who has not completed fourteen years of age. The *Merchant Shipping Act, 1958* and *Apprentices Act, 1961* don't define a child, but in provisions of the act state that a child below fourteen is not permitted to work in occupations of the act. The *Mines Act, 1952* is the only labour related Act that defines adult as person who has completed eighteen years of age (hence a child is a person who has not completed eighteen years of age).

The *Prohibition of Child Marriage Act, 2006* states that a male has not reached majority until he is twenty-one years of age and a female has not reached majority until she is eighteen years of age. The *Indian Majority Act, 1875* was enacted to create a blanket definition of a minor for such acts as the *Guardians and Wards Act of 1890*. Under the *Indian Majority Act, 1875* a person has not attained majority until he or she is of eighteen years of age. This definition of a minor also stands for both the *Hindu Minority and Guardianship Act, 1956*. Muslim, Christian and Zoroastrian personal law also upholds eighteen as the age of majority. The first *Juvenile Justice Act, 1986* defined a boy child as below sixteen years of age and a girl child as below eighteen years of age. The *Juvenile Justice (Care and Protection of Children) Act, 2000* has changed the definition of child to any person who has not completed eighteen years of age.

Because of its umbrella clauses and because it is the latest law to be enacted regarding child rights and protection, many are of the opinion that the definition of child found in the *Juvenile Justice Act, 2000* should be considered the legal definition for a child in all matters.

6. Identifying Rights: of Children

In our country, rights of children are recognized to be essential rights by way of judicial pronouncement, as our Courts take the task to determine it, when occasion so arises. Infact, our legislators are expected to realize need to recognize fundamental rights of children in following areas:

(a) Right to Survival:

- * Right to be born,
- * Right to minimum standards of food, shelter and clothing,
- * Right to live with dignity,
 - * Right to health care, to safe drinking water, nutritious food, a clean and safe environment, and information to help they stay healthy.

(b) Right to Protection:

- * Right to be protected from all sorts of violence,
- * Right to be protected from neglect,
- * Right to be protected from physical and sexual abuse,

- * Right to be protected from dangerous drugs.
- (c) Right to Participation :
- * Right to freedom of opinion,
 - * Right to freedom of expression,
 - * Right to freedom of association,
 - * Right to information,
 - * Right to participate in any decision making that involves him/her directly or indirectly.
- (d) Right to Development:
- * Right to education,
 - * Right to learn,
 - * Right to relax and play,
 - * Right to all forms of development - emotional, mental and physical.

Out of above, only the 'right to education' has been specifically identified to be the basic right of children only after intervention of Supreme Court. The addition of the *Right to Education (RTE) in the Universal Declaration of Human Rights in 1948* was the beginning of a remarkable expansion of educational opportunities around the world. The Apex Court led a great importance on various aspects of the issues related to children qua the ideals of social and economic justice. It was observed in *Unni Krishnan's*⁴ case that Article 21 is the heart of Fundamental Rights and it has extended the scope of Article 21 by observing that the right to life includes the education as well as, as the right to education flows from the right to life.

As a result of expansion of the scope of Article 21, the Public Interest Litigations in respect of children in jail being entitled to special protection, health hazards due to pollution and harmful drugs, housing for beggars, immediate medical aid to injured persons, starvation deaths, the right to know, the right to open trial, inhuman conditions in aftercare home have found place under it.

Through various judgments the Apex Court also included many of the non-justifiable Directive Principles embodied under Part IV of the Constitution and some of the examples are as under:

- (a) Right to pollution free water and air.
- (b) Protection of under-trial.
- (c) Right of every child to a full development.
- (d) Protection of cultural heritage.

The Government of India by *Constitutional (86th Amendment Act) Act, 2002* had added a new *Article 21-A, which provides that -*

"The State shall provide free and compulsory education to all children of the age of 6 to 14 years in such manner as the State may, by law determine".

Further, they strengthened this *Article 21-A* by adding a clause (k) to *Article 51-A*, which provides for those who are a parent or guardian to provide opportunities for education to his/her child or ward between the age of 6 and 14 years. On the basis of the Constitutional mandate provided under *Articles 41, 45 46, 21-A, 51-A(k)* and various judgments of Apex Court, both the Government of India, has taken several steps to eradicate illiteracy, improve the quality of education and simultaneously ensure that the dropouts are brought to nil.

The Parliament of India enacted the *Right of Children to Free and Compulsory Education Act or Right to Education Act (RTE)* on August 2009. The same got enforced on April 1st, 2010.

7. Awakening: By commissions

The Commissions for Protection of Child Rights Act, 2005 has ultimately been enacted with following statement, objects and reasons:

“An Act to provide for the constitution of a National Commission and State Commissions for Protection of Child Rights and Children’s Courts for providing speedy trial of offenses against children or of violation of child rights and for matters connected therewith or incidental thereto. WHEREAS India participated in the *United Nations (UN) General Assembly Summit in 1990*, which adopted a *Declaration on Survival, Protection and Development of Children*; AND WHEREAS India has also acceded to the *Convention on the Rights of the Child (CRC)* on the 11th December, 1992; AND WHEREAS CRC is an international treaty that makes it incumbent upon the signatory States to take all necessary steps to protect children’s rights enumerated in the Convention; AND WHEREAS in order to ensure protection of rights of children one of the recent initiatives that the Government have taken for children is the adoption of *National Charter for Children, 2003*; AND WHEREAS the *UN General Assembly Special Session on Children held in May, 2002* adopted an Outcome Document titled “*A World Fit for Children*” containing the goals, objectives, strategies and activities to be undertaken by the member countries for the current decade; AND WHEREAS it is expedient to enact a law relating to children to give effect to the policies adopted by the Government in this regard, standards prescribed in the CRC, and all other relevant international instruments.”

The National Commission for Protection of Child Rights (NCPCR) was established in **March 2007** as a statutory body under the **Commissions for Protection of Child Rights Act, 2005**. It was set up to protect, promote and defend child rights in the country. The Commission consists of a chairperson and six members who are well versed in child welfare.

Function of the Commission:

Examine any law or constitutional provisions to ensure that the safeguards of the law protect child rights,

Provide the Central Government with recommendations to improve correct the safeguards,

Inquire into child rights violations,

Examine the risk factors for children affected by terrorism, communal violence, riots, natural disasters, domestic violence, HIV/AIDS, trafficking, maltreatment, torture and exploitation, pornography, and prostitution and recommend appropriate remedial measures.

Look into the special care and protection of children from distress, marginalized and disadvantaged back grounds.

Study and ensure implementation of child rights treaties

Conduct research in the field of child rights.

Create awareness through various mediums

Inspect any children's home or observations homes where children have been detained

Inspect any juvenile's custodial home, or place of residence or institution for children, under the control of the Central Government or any other authority, and take up with authorities for remedial action.

Inquire into complaints and take *Suo motu* notice of matter relating to deprivation and violation of child rights or non implementation of laws providing for protection and development of children or non compliance of policy decisions, guidelines or instructions to ensure welfare of the children.

India has also launched an *Integrated Child Protection Scheme which aims at shielding children from violence and abuse.*

8. Conclusions

Although, our Parliament has enacted Commissions for Protection of Child Rights Act, 2005 and Right of Children of Free and Compulsory Education Act or Right to Education Act (RTE) after inserting certain provisions by Constitutional (86th Amendment Act) Act, 2002, but declaring certain rights of our children to be 'fundamental rights' has still seems to go a long way. The Fundamental Rights are defined as basic human freedoms that every Indian citizen has the right to enjoy for a proper and harmonious development of personality. These rights universally apply to all citizens, irrespective of race, place of birth, religion, caste or gender. Law protects physical harm and exploitation of children but still the childhood itself has not been recognized to be the fundamental right of each child. Just like sense of freedom or life has been recognized to be the fundamental rights in our Constitution, childhood needs to be recognized as a guaranteed right under Part III of our Constitution. In A.K. Gopalan's case, Apex Court has way back expressed;

"The material points substantially altering the edifice are first in the Preamble which declares India a Sovereign Democratic Republic to secure to all its citizens justice, liberty and equality and to promote among them all, fraternity. Part III of the Constitution is an important innovation. It is headed "Fundamental Rights."⁵

The words, '*all its citizens*' though include children but still Part-III needs to take care of citizens of special category who are innocent and unaware of their rights. An adult citizen can claim his or her fundamental right but a child, who is even not aware about him/herself while subjected to injustice, torture, inequality, poverty, illiteracy, malnutrition etc. is dependent on elders or sometimes, ruthless system for justice through others. Though all the relevant rules and policies are in place, there is a lack in enforcement initiatives.

The law enforcement agencies and even our Courts need to be sensitive, polite and vigilant while dealing with the matters related to children.

As barriers, there are several factors that forbid effective implementation of the laws. Due to relatively low success in achieving concrete child development outcomes in India, the condition of underprivileged kids and underprivileged youth is harsh and needs urgent attention. There is a need to intensify efforts for children welfare at all levels to implement the rules and provisions of the Convention and contribute to create a world suitable for children. This is may be because innocence of a child or childhood has not been recognized to be a guaranteed right.

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ECONOMICAL IMPACT OF TOURISM MANAGEMENT- A STUDY ON AMDAMAN ISLANDS

G. Mehul Krishna Kumar^[1], Dr. Amit K Srivastav^[2]

Doctoral Research Scholar^[1], Professor^[2],
School of Management

Shri Venkateshwara University, Gajraula, India

ABSTRACT

Tourism is a multi-fragmented industry that entails many industries under its broad umbrella. The major constituents of modern day tourism include attraction, transportation, accommodation, food services, entertainment and recreation. The study was conducted at various tourist destinations of the Andaman Islands. These locations basically included the areas that were visited or resided (hotel) by the tourist in the process of undertaking the phenomenon of tourism. The study tries to put forward a way to showcase the tourism impact on the economy of the destination. The study was conducted using quantitative approach that included those of exploratory data analysis and correlation among the variables. Results clearly showed that the expense undertaken by the tourist on their visit helped in developing the economic status of the destination. This research mainly focused on the tourism development in Andaman Island and its impact on Indian Economy not to beyond this context.

Keywords: Accommodation, Transportation, Attraction, Food and Beverages, Andaman Islands.

1. INTRODUCTION

India is growing rapidly in terms of tourism and entails a crucial role in the country's economy. According to the World Travel and Tourism Council (2017) — “tourism generated 15.24 lakh crore (US\$210 billion) which in turn contributed to 9.4% of India's GDP (Gross Domestic Product). To add more, the tourism industry provided 41.622 million jobs that are around 8% of the total employment. Further it is predicted to grow at an annual rate of 6.9% that is 32.05 lakh crore (US\$450 billion) by 2028 (9.9% of GDP).” In a developing country like India, tourism has resulted up being one of the imperative parts of the economy, adding to GDP and generating employment opportunities. Tourism is one of the developing organizations in the country with unprecedented potential for expansion and enhancement. The tourism industries play an eminent role in any countries economic development. It essentially enables the country to make openings of jobs for the unemployed citizens. Besides, it is additionally a standout amongst the most vital engines that attracts additional trades potential. It is also critical to extend the activity of the legislature to impact India to prevail in tourism and set up itself in the overall market. India has a rich wellspring of tourism for the establishment of the brand. India has moved the brand Incredible India to improve tourism.

The current study coins how tourism segment is significant for the development economically. In other words the research tries to analyse tourism and its economic effect in

context to mother land India, with a special case study on an exclusive group of islands. The study was undertaken at a remote place that is home to a vivid variety of living organisms along with the marvellous beauty of Mother Nature that attracts tourists from around the world. A group of land territories scattered in the Bay of Bengal forms the mesmerizing beauty of Mother Nature represents the whole of Andaman and Nicobar Islands.

2. OBJECTIVES

In order to analyze the impact of tourism on the economical aspects of a region following objectives were taken into account:

- i. To determine the relationship between the money spent on accommodation, transportation, attraction, and food and beverages.
- ii. To analyze the economical impact of tourism in Andaman Islands.

3. RESEARCH METHODOLOGY

Following a review of literature and the characterization of the study area; the methodology used in this research was based on both primary and secondary source data. The primary data's were obtained by conducting fieldwork in Andaman Islands. The surveys were conducted in places that were visited by tourist— this included various hotels, restaurants, local food stalls, market areas and places that provided various activities to the visiting tourists from all walks of life. The questionnaires were supplied to the tourists once they were free from all activities and where either simple relaxing or where doing nothing. During the survey comfort and respect to the views of the tourist were kept in mind.

Surveys were conducted between the months of November 2017 to April 2018. The questionnaire was distributed in only English language. Complete freedom of independence was given to the participants while filling the questionnaire; although the interviewer was present in case they had some difficulty in filling the form. The survey was completely anonymous. A total of 500 valid questionnaires were received by the interviewer. The interviewer made sure that the questions were not left blank by the respondents. The measurement instrument included those of the questions related to the money spent by the tourists in accommodation, transportation, attraction and food and beverages.

The data collected were organized, tabulated and analyzed by using the SPSS 24.0 program (IBM Corporation, Armonk, NY, USA).

4. REVIEW OF LITERATURE

The British Empire once had conquered almost the entire world. They established their rule and supremacy in almost every part of the globe. The colonization of various pieces of land by the Britishers resulted in a lot of changes culturally, traditionally and politically. They explored whole of the world and colonised the territories discovered by them. It was in the year 1789, when Lieutenant Archibald Blair came to the archipelago as a Governor General of India, and Lord Cornwallis had ordered him to survey the land, raise the British flag and set up harbours where ships could refit themselves in time of war or distress. Besides this historical account, the accounts mentioned in the previous section may be categorised as travelogues, some of them even the products of mere imaginations that are interesting to read but worth less to a serious historian. The hydrographer appointed by Lord Cornwallis explored the entire Andaman and found Chatham Island, a small island about 12 acres in area apt for the construction of harbour that is well connected to the main island by a causeway at low tide, and easy to defend against the hostile tribes. People were brought more in numbers for the gradual settlement of colony in these islands but the monsoon of 1795 brought sickness and misery afresh taking fifty lives. The British officials started feeling the disadvantages of this place against the unrivalled advantages as a naval port. However in

1796, the council of directors finally took a decision to shut down the settlement and on 8th February 1796, issued instructions to abandon the islands. As the people left the islands along with the British officials, the Andamanese went back to their state of isolation to remain undisturbed and unapproached for the next sixty years.

The outbreak of violence in 1857, where Indians started protesting against the Britishers, forced the government to set up penal settlement in a place quite distant from the mainland. This led to the formation of the Andaman committee that undertook its expedition in November and December 1857, and submitted its report in January 1858 which favoured Andaman as the best site for penal settlement. The old harbour of Andaman was renamed as Port Blair and on 22 January 1858 Captain Man raised the Union Jack at Port Blair. At first the prisoners who came to these islands along with the officials had quite a good time during the times of exploration and settlement. By the end of the terms of the prisoners, they were sent back to their home state but the better treatment and the availability of money in working at these groups of islands brought them back. As a result of this, crimes started increasing in the country with more and more people wanting to be deported to Andaman Islands. This made the Britishers take some stringent action and make the rules of the islands more strict and inhuman. From here the Andaman history entered into a phase of struggle, development and misery. This phase lasted till the end of British Rule that is 1947. During this period the prisoners, better known as the freedom fighters of Mother India were brought here and tortured. The construction of Cellular Jail started in 1896 and was ready by 1910. This immortal structure had 668 cells constructed on the pattern of Madras close prison, so that no prisoners could see another during their confinement. It was here the great Veer Savarkar stayed for almost two years without knowing the fact that his brother too was imprisoned in the same jail. The British officials set up their base camp in the Ross Island and made it the capital city of the islands. The prisoners who did not listen to the Britishers were taken to the Viper Islands and hanged to death. The Cellular Jail also had the provision of hanging prisoners but mass execution of prisoners took place in Viper Island.

By May 1912 Indian newspapers had got the wind of the state affairs and begun running stories of the atrocities being perpetrated in these islands. The place started getting attention by the name of "Hell on Earth" and subsequently the prisoners started revolting against the officials of the British rule. The hunger strike of 1937 which almost lasted for fifty six days was finally ended by the intervention of Mahatma Gandhi and the political prisoners were shipped back. The pathetic era of Cellular Jail came to an end and the penal colony went back to normal. But this peace was short lived as the outbreak of Second World War in 1939 brought the dramatic entry of the Japanese in December 1941. The British moved back to Calcutta, evacuating the islands by 13th March 1942. The Japanese were ruthless and more brutal. They killed people and made the place more unstable for the settlers to reside. However all these brutalities came to an end when Imam-ul-Majid in February 1947, was made the first Chief Commissioner of Andaman of an independent India.

Today the Andaman bunch comprises of 550 islands—islets that covers a land territory of 6,408 km of which only 28 islands are inhabited. This gathering incorporates extensive islands, for example—North Andaman, Middle Andaman, South Andaman and Little Andaman; while islands in Ritchie's Archipelago comprises of the world famous Swaraj Dweep Island (Havelock Island) and Shaheed Dweep Island (Neil Island) among others. The Islands have one of a kind history—geopolitical area and statistic profile which makes it unique from others.

5. EXPLORATORY DATA ANALYSIS

Analyzing the Money Spent by the Tourist on their Visit to the Andaman Islands

In order to analyze the economical condition of a tourist destination, it is necessary to analyze the basic amount of money spent by the tourist on their visit to the location. So with the help of the distributed questionnaire, it was tried to analyze the amount of money spent by the tourist on the basic elements of tourism i.e. accommodation, transportation, attraction and last but not the least, food & beverages.

5.1 Spent on Accommodation (Per Person)

The table 1 shows the frequency distribution of the money spent by a tourist on a per day basis in accommodation. It is interesting to see that out of 500 tourists, 18.0% of tourists spent under 1000 for Accommodation which is highly appreciable while 38.0% of tourists spent 1000 – 2000 which is a economical spent, however 12.0% of tourists spent 2000 – 4000 which is a moderate expenditure of residence. It was noted that 20% of the respondent spent Rs 8000 and more, which show that the high level guest looking for luxury accommodation also visited the islands.

Table 1: The Expenditure in Andaman's per person per day for Accommodation

<i>Variable (Per day)</i>	<i>Frequency (%)</i>
Under 1000	90 (18.0%)
1000-2000	190 (38.0%)
2000-4000	60 (12.0%)
4000-8000	60 (12.0%)
8000-10000	55 (11.0%)
Above 10000	45 (9.0%)

5.2 Spent on Transportation (Per Person)

In spite of the respondents complaining regarding the high price of transportation in the islands, it was interesting to analyze the money spent by them on their movement in the islands.

Table 2 shows that almost 25% of respondents have spent at least Rs 2,000 on a daily basis. However 50% of them have accepted to have spent money ranging from Rs 2,000-8,000. It was astonishing to find that out of 500 respondents; 50 of them had spent more than Rs 10,000 on a daily basis. The figures shown here display that the transportation in the Andaman Islands was indeed costly, yet the hike in price was quite obvious due to the remoteness of the landmass.

Table 2: The Expenditure in Andaman's per person per day for Transportation

<i>Variable (Per day)</i>	<i>Frequency (%)</i>
Under 1000	25 (5.0%)
1000-2000	100 (20.0%)
2000-4000	125 (25.0%)

4000-8000	125 (25.0%)
8000-10000	75 (15.0%)
Above 10000	50 (10.0%)

5.3 Spent on Attractions (Per Person)

Any destination receives the maximum number of tourist only if the destinations have some mesmerizing attractions. These attractions include those of both the natural and manmade, here natural attraction refers to those of beaches, mountains, historical sites etc.; whereas manmade attractions are those sites which are built particularly for the tourist's relaxation, enjoyment, refreshment etc.

Table 3 shows that almost 45% of the visiting tourist had spent upto Rs 2,000 daily for attraction purposes while 10% of the respondents stated that they had spent more than Rs 8,000 on availing the attractions available in Andaman Islands.

Table 3: The Expenditure in Andaman's per person per day for Attractions

Variable (Per day)	Frequency (%)
Under 1000	50 (10.0%)
1000-2000	225 (45.0%)
2000-4000	125 (25.0%)
4000-8000	50 (10.0%)
8000-10000	25 (5.0%)
Above 10000	25 (5.0%)

5.4 Spent on Food and Beverages (Per Person)

Food is considered to be the basic requirement for the existence of mankind. Similarly the food consumed by the tourist on their visit to a destination helps in advancing the economical status of the local residents. It was important to analyze the money spent by the tourist on food and beverages while they visited the Andaman Islands.

Table 4 shows the expenditure in Andaman's per person per day for food and beverages were as follows; out of 500 tourists, 45% of the respondents had spent Rs 2,000-4,000 on food and beverages while 7% tourist claimed to have spent Rs 8,000 and more on a daily basis.

Table 4: The Expenditure in Andaman's per person per day for Food and Beverages

Variable (Per day)	Frequency (%)
Under 1000	10 (2.0%)
1000-2000	140 (28.0%)
2000-4000	225 (45.0%)
4000-8000	90 (18.0)
8000-10000	25 (5.0%)
Above 10000	10 (2.0%)

6. HYPOTHESIS TESTING

H₀: There is no relation between the money spent in Accommodation, Transportation Attraction (natural and manmade) and food-beverages by the visiting tourist.

H_A: There is significant relation between the money spent in Accommodation, Transportation, Attraction (natural and manmade) and food-beverages by the visiting tourist.

Table 5 describes the mean, standard deviation and numbers of following variables— money spent on Accommodation, Transportation, Attractions (natural and manmade) and food-beverages by the visiting tourists.

Table 5: Descriptive Statistics

	<i>Mean</i>	<i>Std. Deviation</i>	<i>'N'</i>
Accommodation	3.9000	1.60473	500
Transportation	4.0400	1.51095	500
Attractions	4.1800	1.49401	500
Food and Beverages	4.2200	1.39121	500

The value of correlation between the money spent in accommodation, transportation, attraction (natural and manmade) and food-beverages by the tourists were 0.398, 0.243, 0.134, 0.145 and 0.120 to each other's; which showed strong relation between them “with p value less than 0.05 level of significance”.

Thus the alternate hypothesis stands accepted, i.e., there is significant relation between the money spent in Accommodation, Transportation, Attraction (natural and manmade) and food-beverages by the visiting tourist.

Table 6: Correlations

		<i>Accommodation</i>	<i>Transportation</i>	<i>Attractions</i>	<i>Food and Beverages</i>
Accommodation	<i>Pearson Correlation</i>	1	.398**	.243**	.134**
	<i>Sig. (2-tailed)</i>		.000	.000	.003
	<i>N</i>	500	500	500	500
Transportation	<i>Pearson Correlation</i>	.398**	1	.145**	.120**
	<i>Sig. (2-tailed)</i>	.000		.001	.007
	<i>N</i>	500	500	500	500
Attractions	<i>Pearson Correlation</i>	.243**	.145**	1	.067
	<i>Sig. (2-tailed)</i>	.000	.001		.133
	<i>N</i>	500	500	500	500
Food and Beverages	<i>Pearson Correlation</i>	.134**	.120**	.067	1
	<i>Sig. (2-tailed)</i>	.003	.007	.133	
	<i>N</i>	500	500	500	500
**Correlation is significant at the 0.01 level (2-tailed)					

7. DISCUSSION

7.1 Impact of Tourism on Indian economy

Tourism has turned into the biggest industry in the world, creating riches and employment, opening the psyches of visitors to visitors for various lifestyles. The most critical components for the achievement of tourism development incorporate item improvement, showcasing, guidelines and human resource development. India's tourism is one of the prospering divisions as far as scope. Tourism in India is continually developing to create employment and gain a lot of foreign money to settle the economic and social development of the nation. It additionally protects and keeps up the diversity of India's characteristic and social situations. We must build up the tourism industry with government support, new inception, activities and plans to impact foreigners to hold our position solidly. This research clarifies the effect of tourism on the Indian economy. Tourism in India is a key factor for development and a critical wellspring of foreign exchange earnings. The tourism division in India is thriving because of an expansion in foreign tourist entries (FTA) and a more prominent number of Indians making a trip to national goals. India has staggering development in tourism and is a standout amongst the most essential economic changes. Tourist movement has enduring financial effects on the economy and the host network. Even though the industry has incredible opportunities, it is important to make it positive regarding what's to come.

Tourism is viewed as one of the biggest economic activities in the world and maybe the biggest in the administration part. It is likewise one of the quickest developing areas of the worldwide economy. Tourism is indispensable for some nations, because of the income produced by the utilization of products and enterprises by tourists, the charges forced by organizations in the tourism area and employment opportunities in the parts of services related with tourism. Tourism has an immediate and aberrant impact on society, which is viewed as a powerful instrument for the economic development of the country. These effects are economic, social and social, natural, congestion and blockage, network frames of mind, services and expenses. Kreag likewise dissected that every one of these effects has positive and negative viewpoints. A portion of the highlights that depict the effect of tourism on the economy are shown in the figure 6.1.

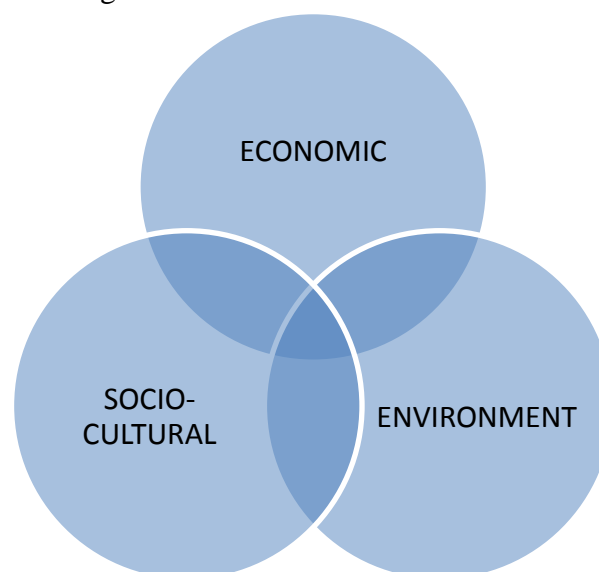


Figure 1:- Impact of Tourism

Tourism has turned into a key segment of the world economy and has turned into an essential workforce in world exchange. It has had a progressive and huge effect on the worldwide economic situation. Tourism has been distinguished as the principle export segment in the world. The multifaceted idea of this segment makes it an impetus for economic development and helps adjusted provincial development. It is a low-capital industry and serious work with economic multiplier and offers the chance to acquire foreign currency at low social cost. The tourism industry goes about as an incredible operator of both economic and social changes. It invigorates employment and investment, modifies the structure of an economy, contributes altogether to foreign currency gains and keeps up a good parity of installments. The cash spent by tourists in a country is conveyed a few times simultaneously; the absolute income got from tourism is commonly more noteworthy than the real use. It is completely perceived that the multiplier impact of tourism income stretches out to the optional and tertiary areas of an economy. Tourism has an economic, social, instructive and political importance. Advertising and advancement are of imperative significance in the tourism segment on account of the intensity of the tourism industry both inside and among the countries that create tourism. The tourism division makes immediate, aberrant and prompted employment. It creates a wide scope of occupations, from exceedingly qualified and prepared chiefs, from star lodgings to flat mates, merchants and craftsmen. With its quickest development, new word related skylines open for youngsters in creating nations.

Tourism in India has extraordinary relevance for economic development, social development and national incorporation. India is a tremendous country of incredible magnificence and diversity and its tourism potential is similarly immense. With its rich social legacy that shows itself gloriously in a considerable lot of the royal residences, sanctuaries, mosques, posts, caverns and ancient engineering wonder divider depictions, its shifted geology ranges from the repetitive plain to the most elevated mountains in the world.

India's tourism and hospitality industry has turned out to be one of the primary drivers of development in the administration division in India. In developing nations like India, tourism has turned out to be one of the primary divisions of the economy, adding to a vast piece of national income and producing colossal openings for work. It has turned into the industry's quickest developing services in the country with extraordinary potential for further extension and broadening, it has an immediate and backhanded chain of association with different areas of the economy. Along these lines, tourism has an expansive positive and negative effect on the economic, social and environmental parts of India.

7.2 Tourism and Economic development of Andaman Islands

Silver sand beaches surrounded by purplish blue waters are home to a rich flora and fauna. The Andaman Islands are a group of 572 islands and islets situated on the territory of India in the Bay of Bengal. Until the start of the twentieth century, the lovely Andaman Islands were covered in haziness. Prior to India's autonomy, they were known as kalapani, a colonial jail to which the general population of continental India had been removed. It was just during the 1950s that saw a few tourists from India or abroad. Over the years tourists who began arriving have expanded step by step, attracted by the pleasant excellence of the islands.

The economic development of any country depends to an expansive degree on the growth and development of exchange, trade and industry. The island of Andaman is wealthy in resources for tourism, which are in bounty. The common magnificence of the Andaman Islands is extremely alluring. Both domestic and foreign tourists think of it as the green heaven under the perceived Marigold sun. Tourism in the Andaman Islands is still in its infancy. The resources in charge of the growth of tourism have not yet been completely used to the level of

exploration. Be that as it may, right now, tourism is developing crisscross, both positive and negative, and expanding and diminishing. The tourism industry in these islands can be created in an extremely vast manner. In this way, the growth of the tourism area in these islands, both as far as the quantity of domestic tourists, foreign tourists and the all-out income got from this administration, has been discovered, investigated, deciphered and introduced. The issues of tourism on these islands are additionally recommended and proper measures are taken.

Tourism is the main region of these islands, as different divisions don't enlist much growth and development because of various reasons. In any case, tourism has encountered extensive growth, although it requires productive administration with arranging, association, work force, control, correspondence, spending plan, coordination and with the fitting tourism arrangement. Tourism has incredible inclusion in these islands if legitimately overseen. When the deterrents headed for tourism development in the Andaman Islands have been evacuated, and if a technique, tourism arranging and tourism approach are figured in the light of the recommendations below and executed with incredible consideration, it is immovably trusted that tourism Andaman Islands will be improved, tourism incomes will increment, managerial and regulatory costs will be diminished and surplus will be noticeable. Tourism will draw in more tourists to these islands and could likewise contribute more to the economic development of the Andaman Islands.

7.3 Growth of Tourism

Tourism in the Andaman Islands is still in its infancy. The resources in charge of the growth of tourism have not yet been utilized to its limits by the tourism industry players. Be that as it may, right now, tourism is developing crisscross, both positive and negative, and expanding and diminishing. On analyzing the income collected by the tourism industry players, retrieved from the questionnaire and the interviews done with the organization heads and the visiting tourist proves that tourism is on a roll of development. Further the available data on the inflow of tourist reported by the Andaman and Nicobar administration shows that the incoming of tourist to these groups of islands is steadily growing for the last years. Figure 2 shows the inflow of tourist to Andaman Islands, it is interesting to find that the incoming of tourist is showing positive rise and the number of tourist visiting the islands is meant to increase in the coming years. It must be noted that the maximum number of tourist visiting these islands are more of domestic than foreign tourist. However it is expected that the incoming of foreign visitors will increase with the development of Veer Savarkar International Airport that is expected to be completed by 2020 and can carry each of six hundred foreign and domestic tourists.

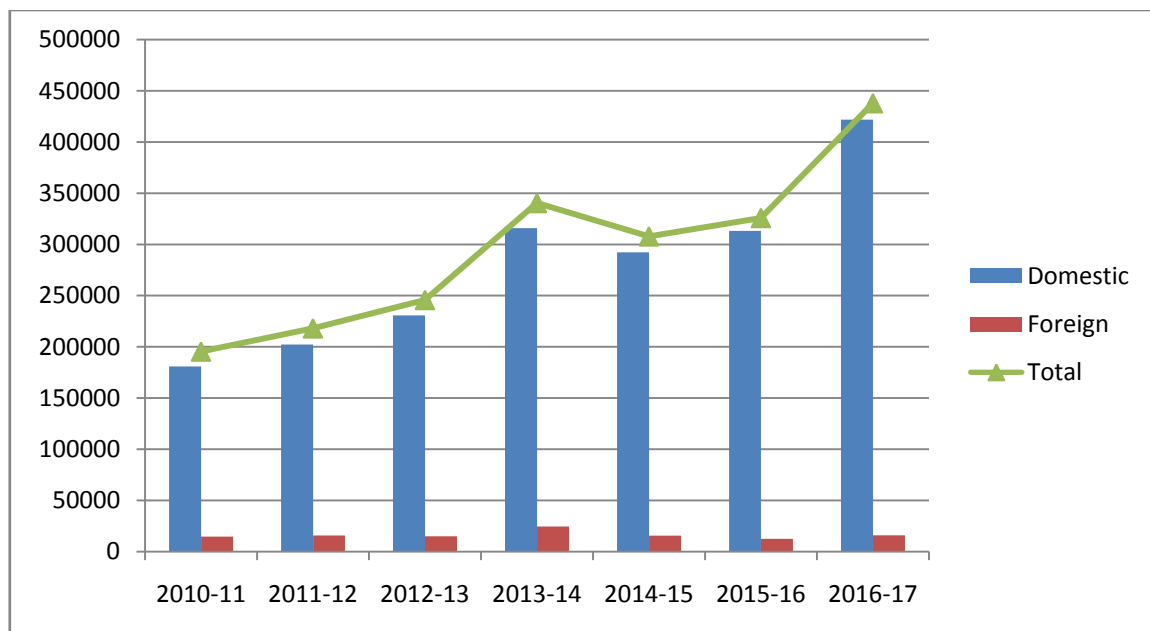


Figure 2:- Inflow of Tourist (Source: “Directorate of Economic and Statistics—A&N Administration, 2016”)

Domestic Tourist

The Andaman Islands are considered to be a small or mini India due to the incredible racial and social mix, all individuals being equal in terms of religions with utmost respect for each other living in this region. The mix culture found on these islands acts as a source of attraction to the entire Indian citizens across the mother country. The visitation of tourist from various parts of the country results in the formation of domestic tourism and these tourists are considered to be domestic tourists. Domestic tourism helps in building the likelihood of harmony through comprehension between various parts of the population. There is no denying the fact that the development of foreign tourism is conceivable only if national tourism has a fast and strong growth in the Island tourism. At present Andaman receives comfortable number of domestic tourist yet increase in the same would result in development of tourism more firmly.

Foreign Tourist

The incoming of persons from their home country to another country for the purpose of leisure, recreation, adventure etc results in the development of the term foreign tourist. A foreign tourist plays a crucial role in the development of the local economy of the destination visited by them which further helps in developing the country's economy. Foreign tourism brings foreign currency to the destination in advancement to the international exchange which helps in developing the financial conditions of the location. When it comes to Andaman Islands it is seen that less number of foreign tourist visit the destination, however the right focus given in marketing the destination will help in establishing the islands as grand product in the global market.

7.4 Economical Impact of Tourism in Andaman Islands

Tourism conveys money to the destinations economy that further helps in improving the infrastructure of the location and develops enough business opportunities at ground level. The positive economical effect on the destination helps in building the entire nation itself. However the positives effects are always followed by negative aspects that could adversely influence the economy of the destination by adding hike in the price of basic goods, creating

an impermanent deficiency of land, employment and the very Mother Nature. So it is necessary to embrace a logical and a practical way to deal with break down by the negative effects of tourism. As discussed in the previous chapter, a sustainable tourism approach must be used to undertake the amazing phenomenon of tourism in Andaman Islands. The unavailability of proper data in respect to analyze the economical effect of tourism in Andaman Islands resulted in undertaking a field survey that accessed and analyzed the money spent by the tourist on their visit to the islands.

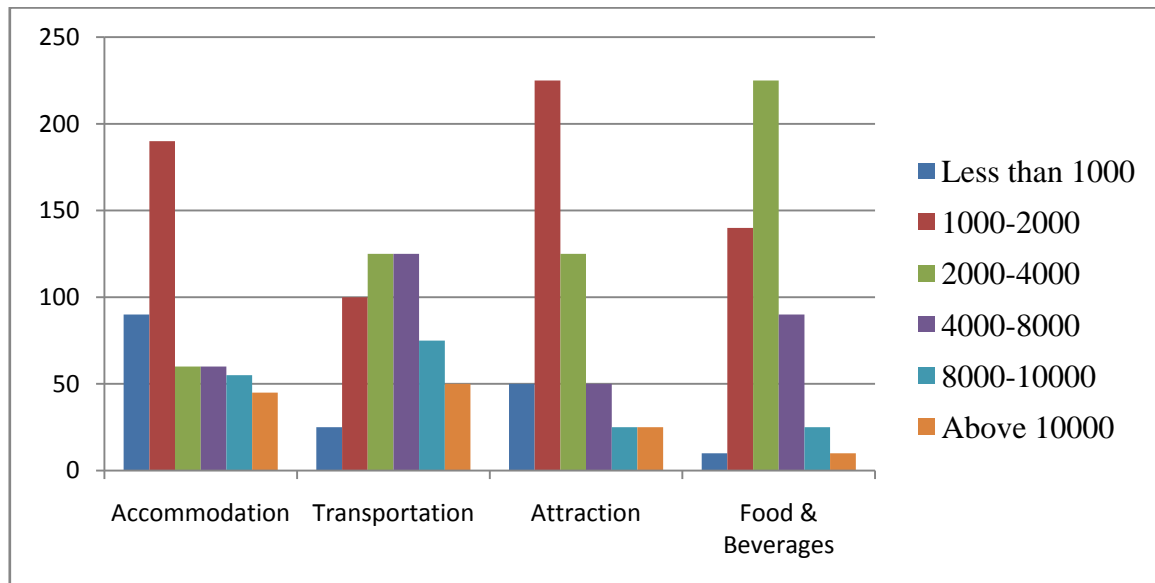


Figure 3:- Money spent by tourist in Accommodation, Transportation, Attractions, Food and Beverages on their visit to Andaman Islands

Figure 3 showcase the money spent by the tourists with respect to accommodation, transportation, attraction and food and beverages on their visit to the islands. While analyzing the data's it was found that they all were positively correlated to each other. In other words the above mentioned sectors forms basic element of tourism existence showed that increase in one sector gradually increased the other sector as well. To be precise increase in the number of money spent in accommodation resulted in increase in the number of money spent in transportation, attraction and food and beverages. The result obtained showcase that tourism definitely has an impact on the local economy which further helps in stating the fact that the increase in the local economy gradually contributes to the national economy. Thereby making a strong statement that tourism development in Andaman Islands definitely has a positive impact on the Indian economy.

8. CONCLUSION

The research helped in analyzing the basic constituents of the tourism sector which is accommodation, transportation and attractions (natural and manmade). While analyzing the aforesaid sectors, it was found that all these sectors are closely related to each other, which means they form the basic requirement for the existence of tourism in any area. In order to analyze the economical impact of tourism in Andaman Islands, a survey on the money spent by the tourists in accommodation, transportation, attraction and food and beverages was undertaken due to the lack of any solidify data available in this regard. The results show that tourist on their visit to the islands definitely spend money and all these expense borne by them helps in the economical development of the local residents which further helps in the

development of the tourism sector across the islands. This makes it clear that tourism definitely has a positive impact on the local economy which further has a major impact on the national economy.

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CHEMICALLY REACTIVE MHD FREE CONVECTIVE FLOW THROUGH A HORIZONTAL CHANNEL IN THE PRESENCE OF RADIATION AND HEAT SOURCE

Mr. Parvez Akhtar Khan

Assistant Professor at Integral University, Lucknow

Abstract-

Fluid mechanics is studied as a branch of science and engineering; that it contains liquids (fluid, gas and plasma) and many forces acting on this. This branch of fluid mechanics can be divided into two sub-branches respectively fluid kinematics and fluid dynamics. First is a liquid kinematics study when the fluid is in its rest position. While the other branch is fluid dynamics only referred to when the fluid is in some motion. In the last Thesis Dickens; fluid dynamics their maternal branch became an active field of fluid mechanics research. In liquid mobility; basically we study the effects of various forces acting on the fluid and it is necessary that it remains in motion it has produced many other areas of research magneto hydrodynamics, oceanology, aerodynamics, metrology, gas purification etc. There is a large number of applications in crude oil extraction, whether many industries, biological sciences, drugs and petrochemical industry etc.

Keywords- *mathematical formulation skin-friction coefficient, nusselt number, Sherwood number*

Introduction-

The problem of hydro magnetic flow has been achieved in a horizontal channel due to its many applications in nature, significant attention of many researchers, science and engineering. Which are important with theoretical as well as practical oil industry, pipe flow system, due to their wide utilization in the ground approach water drift etc.

Literature Review-

That Attia et al. (1996) is considered a heat transfer in sticky light incompatible fluid flows with two parallel plates with magnetic effect, when lower plate was kept constant and the upper plate was moving with uniform speed.

Kuznetsov (2001) did analytical study of the effects of thermal dispersal completely developed convection flow in a parallel-plate channel. Neild et al. (2004) discussed the effects of forced convection in saturated holes filled channels medium.

Umawathi et al. (2005) considered two-dimensional fluctuating flow of two immersive fluid with horizontal parallel permeable plates, and their converge flow and heat transfer aspects in a horizontal channel with permeable walls can be controlled by

considering various liquids with different viscosity, by varying the conductivity and also the dimension of the transpiration velocity limit.

Seth et al. (2009) studied couple flux in a rotating system magnetic field is applied to an angle with some inclination. This study was carried forward Seth et al (2012) has the presence of the Hall's current influences.

Matin et al. (2013) analyze the effect of heat and mass flow through the porous channel with the first order the chemical reaction on the wall. He studied fully developed compulsions convection flow and mass transfer in horizontal porous channels full of nano fluid.

Couette flux between two infinite parallel plate with magnetic field Kiema et al. (2015) the study of uniform intensity was studied. Mbugua et al. (2015) is considered MHD fluid flow between parallel porous plate between variable intensity of magnetic field.

Priya et al. (2015) examined steady hydro-magnetic rotating flow a sticky incompatible fluid through a porous medium in a horizontal channel with the current effect of radiation heat transfer and hall.

In a horizontal channel with a rapid gradient with pressure gradient the magnetic field lying in the presence of dust-rich visco-elastic fluid is done by the kuiry Et al. (2016).

Recently, Sayehvand et al. (2017) called the thermophoresis and Brownian motion effect in partially a horizontal channel filled with porous medium.

Mathematical Formulation

We consider the steady free convection flow of chemically reactive stickiness incomparable electrical conductive fluid through a horizontal parallel plate the channel filled with porous media in the presence of transverse magnetic field, radiation and heat source. x^* -axis is taken in the Cartesian coordinate system horizontally in the direction of flux with the plates. z^* - axis is taken vertically x^* - axis The magnetic field of force is applied to the normal position of direction H_0 flow and channel length The whole system revolves with identical angular about velocity Ω about z^* -axis as shown in Fig.(01).

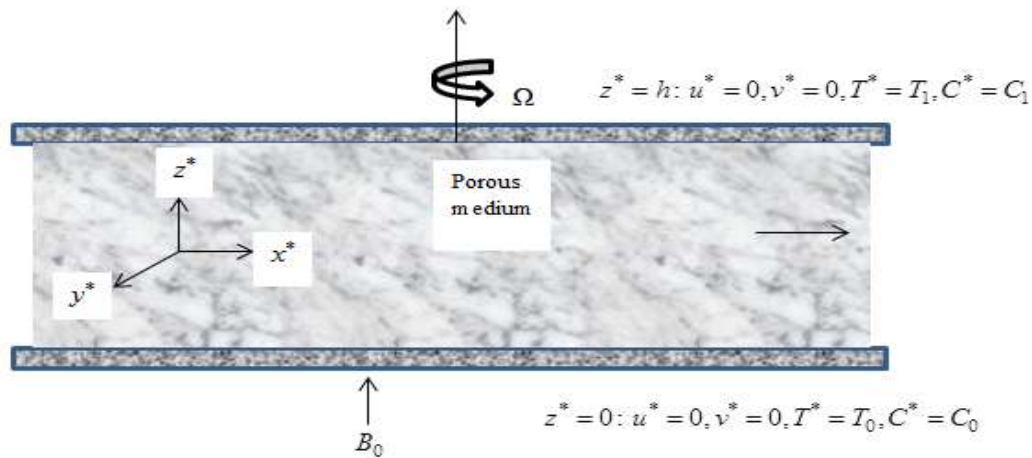


Fig. 01: Physical configuration of the problem

Two horizontal parallel plates are set in the plane $z^* = 0$ (lower plate) and $z^* = h$ (upper plate) and kept at constant temperature T_0, T_1 and constant concentration C_0, C_1 respectively. Plates of channel are assumed of infinite length along x^* and y^* -axis. Therefore all physical quantities are considered constant in these directions and varying with respect to z^* -axis only except the pressure gradient. Hence the continuity equation becomes trivially satisfied.

Using Boussinesq approximation, equation of momentum in x^* and y^* - direction, energy equation and mass equation are-

$$-2\Omega v^* = - \left[\frac{1}{\rho} \frac{\partial p^*}{\partial x^*} + \nu \frac{\partial^2 u^*}{\partial z^{*2}} + \frac{\mu_e J_y H_0}{\rho} - \frac{\nu}{K_p^*} u^* + g\beta(T^* - T_0) + g\beta^*(C^* - C_0) \right] \dots \dots \dots (1.1)$$

$$2\Omega u^* = - \left[\frac{1}{\rho} \frac{\partial p^*}{\partial y^*} + \nu \frac{\partial^2 v^*}{\partial z^{*2}} - \frac{\mu_e J_x H_0}{\rho} - \frac{\nu}{K_p^*} v^* \right] \dots \dots \dots (1.2)$$

$$\frac{k}{\rho C_p} \frac{\partial^2 T^*}{\partial z^{*2}} - \frac{1}{\rho C_p} \frac{\partial q_r^*}{\partial z^*} + \frac{S^*}{\rho C_p} (T^* - T_0) = 0 \dots \dots \dots (1.3)$$

$$D \frac{\partial^2 C^*}{\partial z^{*2}} - K_l (C^* - C_0) = 0 \dots \dots \dots (1.4)$$

Where H_0 is the intensity of applied magnetic field, Ω angular velocity, p^* pressure of the fluid, μ_e magnetic permeability, T^* temperature of the fluid, C^* species concentration of the fluid, β volumetric coefficient of expansion for heat transfer, g acceleration due to

gravity, ν kinematic viscosity of the fluid, β^* volumetric coefficient of expansion for species concentration, ρ density of the fluid, K_p^* permeability of the medium, C_p specific heat at constant pressure, k thermal conductivity, S^* dimensional heat source parameter, q_r^* component of radioactive of heat flux, D mass diffusivity, K_l chemical reaction parameter and J_x, J_y are current density in x^* and y^* direction respectively. When the strength of magnetic field is very high, then generalized ohm's law become change for including the hall current and given by

$$J + \frac{\omega_e \tau_e}{H_0} (J \times H) = \sigma_e \left[E + V \times H + \frac{1}{e \eta_e} \nabla p_e \right] \dots \dots \dots (1.5)$$

Where ω_e is the cyclotron frequency of the electrons, τ_e the electron collision time, e the electron charge, E the electric field, η_e is the number density of the electrons P_e is the electron pressure, H total magnetic field and σ_e is the electrical conductivity. Under the usual assumption in equation (1.5) the electron pressure gradient, ion-slip and thermo electric effects are neglected. So we also assume that the electric field $E=0$. Under these assumptions (1.5) reduces into

$$J_x + m J_y = \sigma \mu_e H_0 v^* \dots \dots \dots (1.6)$$

$$J_y - m J_x = -\sigma \mu_e H_0 u^* \dots \dots \dots (1.7)$$

Where $m = \omega_e \tau_e$ is the hall parameter-

On solving equation (1.6) and (1.7) we get,

$$J_x = \frac{\sigma \mu_e H_0}{1+m^2} (v^* + m u^*) \dots \dots \dots (1.8)$$

$$J_y = \frac{\sigma \mu_e H_0}{1+m^2} (m v^* - u^*) \dots \dots \dots (1.9)$$

Using the equations (1.8) and (1.9), we get the equation of motion with reference to rotating frame

$$-2\Omega v^* = - \frac{1}{\rho} \frac{\partial p^*}{\partial x^*} + \nu \frac{\partial^2 u^*}{\partial z^{*2}} + \frac{\sigma \mu_e^2 H_0^2}{\rho(1+m^2)} (v^* + m u^*) - \frac{\nu}{K_p^*} u^* + g\beta(T^* - T_0) + g\beta^*(C^* - C_0) \dots \dots (1.10)$$

$$2\Omega u^* = - \left[\frac{1}{\rho} \frac{\partial p^*}{\partial y^*} + v \frac{\partial^2 v^*}{\partial z^{*2}} - \frac{\sigma \mu_e^2 H_0^2}{\rho(1+m^2)} (mv^* + u^*) - \frac{v}{K_p^*} v^* \right] \dots \dots \dots (1.11)$$

The boundary conditions for fluid velocity, temperature and concentration distribution are given by

$$\begin{aligned} u^* = 0, \quad v^* = 0, \quad T^* = T_0, \quad C^* = C_0 \quad \text{at} \quad Z^* = 0 \\ u^* = 0, \quad v^* = 0, \quad T^* = T_1, \quad C^* = C_1 \dots \text{at} \quad Z^* = h \dots \dots \dots (1.12) \end{aligned}$$

Method of solution-

For solving the equation (1.10) and (1.11), we assume that

$$\begin{aligned} F^* = u^* + iv^*, \quad \xi^* = x^* - iy^* \dots \dots \dots (2.1) \end{aligned}$$

After combined (1.10) and (1.11), we get

$$2\Omega F^* = - \left[\frac{1}{\rho} \frac{\partial p^*}{\partial \xi^*} + v \frac{\partial^2 F^*}{\partial z^{*2}} - \frac{\sigma \mu_e^2 H_0^2}{\rho(1+m^2)} F^* (1 - im) - \frac{v}{K_p^*} F^* + g\beta(T^* - T_0) + g\beta^*(C^* - C_0) \right] \dots \dots \dots (2.2)$$

Corresponding boundary conditions are:

$$\begin{aligned} F^* = 0, \quad T^* = T_0, \quad C^* = C_0 \quad \text{at} \quad Z^* = 0 \\ F^* = 0, \quad T^* = T_1, \quad C^* = C_1 \dots \text{at} \quad Z^* = h \dots \dots \dots (2.3) \end{aligned}$$

It is assumed that the medium is optically thin with relatively low density. Following Cogley(1968) equilibrium model, the radiative heat flux term is given by

$$\begin{aligned} \frac{\partial q_r^*}{\partial z^*} = 4(T^* - T_0)I^*; \quad I^* = \int_0^\infty K_{\lambda\omega} \left(\frac{\partial e_{b\lambda}}{\partial T^*} \right) d\lambda \dots \dots \dots (2.4) \end{aligned}$$

Where $K_{\lambda\omega}$ the absorption coefficient at the wall and $e_{b\lambda}$ is the plank constant. Here we assume that the temperature differences within the flow are sufficiently small. Now introducing the non-dimensional quantities

$$\begin{aligned} z = \frac{z^*}{h}, \quad u = \frac{u^*}{U_0}, \quad v = \frac{v^*}{U_0}, \quad F = \frac{F^*}{U_0}, \quad \xi^* = \frac{\xi}{h}, \quad p^* = \frac{Ph}{\rho v}, \quad \theta = \frac{T^* - T_0}{T^* - T_1}, \quad C = \frac{C^* - C_0}{C^* - C_1}, \quad N = \frac{4kh^2}{\rho C_p} I^*, \quad \gamma = \frac{K_l h^2}{D}, \quad G_c = \frac{g\beta^*(C - C_1)h^2}{v}, \quad R_0 = \end{aligned}$$

$$\frac{\Omega h^2}{v}, \quad M = \frac{\sigma \mu_e^2 H_0^2 h^2}{\rho v}, \quad G_r = \frac{g \beta (T - T_1) h^2}{v}, \quad S = \frac{S^* h^2}{\mu C_p}, \quad K_p = \frac{h^2}{K_p^*}, \quad P_r = \frac{\mu C_p}{k} \dots \dots \dots (2.5)$$

where u is non-dimensional velocity component along x -axis, T_w fluid temperature at the wall, C_w concentration of fluid species, θ non-dimensional temperature, C non-dimensional concentration, U_0 mean velocity, Pr Prandtl number, G_c Grashof number for mass transfer, G_r Grashof number for heat transfer, R_0 rotational parameter, N non-dimensional radiation parameter, γ non-dimensional chemical reaction parameter, M Hartman number, K_p non-dimensional porosity parameter, S non-dimensional heat source parameter, P non-dimensional pressure gradient and S_c is Schmidt number

By substituting (2.5) into (2.2), (1.3) and (1.4) we get following equations:

$$\frac{\partial^2 F}{\partial z^2} - \left[\frac{M}{(1+m^2)} (1 - im) + K_p + 2iR_0 \right] F = -P - G_r \theta - G_c C, \dots \dots \dots (2.6)$$

$$\frac{1}{Pr} \frac{\partial^2 \theta}{\partial z^2} - N\theta + S\theta = 0, \dots \dots \dots (2.7)$$

$$\frac{\partial^2 C}{\partial z^2} - \gamma C = 0, \dots \dots \dots (2.8)$$

The corresponding boundary conditions reduced as:

$$\begin{aligned} F = 0, \quad \theta = 0, \quad C = 0 \quad \text{at } z = 0, \\ F = 0, \quad \theta = 1, \quad C = 1 \quad \text{at } z = 1, \dots \dots \dots (2.9) \end{aligned}$$

Equations (2.6) to (2.8) are linear partial differential equations; these can be solved by straight forward calculation with the boundary conditions. Their solutions are stated as follows:

$$u = A_{31}^2 e^{A_7 z} \cos(A_8 z) - A_{32}^2 e^{A_7 z} \cos(A_8 z) + A_{29}^2 e^{-A_7 z} \cos(A_8 z) + A_{30}^2 e^{-A_7 z} \cos(A_8 z) + A_9 - A_{12} e^{\sqrt{(S+N)Prz}} - A_{14} e^{-\sqrt{(S+N)Prz}} - A_{17} e^{\sqrt{rz}} - A_{19} e^{-\sqrt{rz}}, \dots \dots \dots (2.10)$$

$$u = A_{31}^2 e^{A_7 z} \sin(A_8 z) - A_{32}^2 e^{A_7 z} \sin(A_8 z) + A_{29}^2 e^{-A_7 z} \sin(A_8 z) + A_{30}^2 e^{-A_7 z} \sin(A_8 z) + A_{10} - A_{13} e^{\sqrt{(S+N)Prz}} - A_{15} e^{-\sqrt{(S+N)Prz}} - A_{18} e^{\sqrt{rz}} - A_{20} e^{-\sqrt{rz}}, \dots \dots \dots (2.11)$$

$$\theta = A_6 e^{\sqrt{(S+N)Prz}} + A_5 e^{-\sqrt{(S+N)Prz}} \dots \dots \dots (2.12)$$

$$C = A_3 e^{\sqrt{r}z} + A_2 e^{-\sqrt{r}z} \dots\dots\dots(2.13)$$

Where A_1 to A_{32} are the constant and their values are given in the **Appendix-1(A)**.

Skin-friction Coefficient-

The skin-friction coefficient at the upper plate ($z^* = h$) of the channel is given by

$$C_f(u) = \left(\frac{\tau_w}{\rho v_0^2} \right)_{z^*=h} = \frac{\mu}{\rho v_0^2} \left(\frac{\partial F^*}{\partial z^*} \right)_{z^*=h} = \frac{1}{Re} \left(\frac{\partial F}{\partial z} \right)_{z=1} \dots\dots\dots(3.1)$$

$$= \dots\dots\dots (C_{fx})_{z=1} + i(C_{fy})_{z=1} \dots\dots\dots(3.2)$$

Where

$$(C_{fx})_{z=1} = \frac{1}{Re} \left(\frac{\partial u}{\partial z} \right)_{z=1} \dots\dots\dots(3.3)$$

$$(C_{fy})_{z=1} = \frac{1}{Re} \left(\frac{\partial v}{\partial z} \right)_{z=1} \dots\dots\dots(3.4)$$

The skin-friction coefficient at the lower plate ($z^* = 0$) of the channel is given by

$$C_f(l) = \left(\frac{\tau_w}{\rho v_0^2} \right)_{z^*=0} = \frac{\mu}{\rho v_0^2} \left(\frac{\partial F^*}{\partial z^*} \right)_{z^*=0} = \frac{1}{Re} \left(\frac{\partial F}{\partial z} \right)_{z=0} \dots\dots\dots(3.5)$$

$$= \dots\dots\dots (C_{fx})_{z=0} + i(C_{fy})_{z=0} \dots\dots\dots(3.6)$$

Where

$$(C_{fx})_{z=0} = \frac{1}{Re} \left(\frac{\partial u}{\partial z} \right)_{z=0} \dots\dots\dots(3.7)$$

$$(C_{fy})_{z=0} = \frac{1}{Re} \left(\frac{\partial v}{\partial z} \right)_{z=0} \dots\dots\dots(3.8)$$

$$\left(\frac{\partial u}{\partial z} \right)_{z=1} = A_{33} \dots\dots\dots(3.9)$$

$$\left(\frac{\partial u}{\partial z}\right)_{z=0} = A_{34} \dots \dots \dots (3.10)$$

$$\left(\frac{\partial v}{\partial z}\right)_{z=1} = A_{35} \dots \dots \dots (3.11)$$

$$\left(\frac{\partial v}{\partial z}\right)_{z=0} = A_{36} \dots \dots \dots (3.12)$$

Where A_{33} , A_{34} , A_{35} and A_{36} are the constants and given in the **Appendix-1(A)**.

Table- 1.1 the numerical values of coefficient of skin-friction at both the plates of the channel for different values of physical parameters when $Re=1$.

S. No.	S	N	γ	R_0	P	Gr	Ge	M	K_p	m	Pr	$(C_{fx})_{z=0}$	$(C_{fy})_{z=0}$	$(C_{fx})_{z=1}$	$(C_{fy})_{z=1}$
I	0.5	1	1	1	1	3	1	1.5	0.5	1	1	0.81	0.57	0.49	2.08
II	1.5	1	1	1	1	3	1	1	0.5	1	1	0.39	0.67	0.54	1.20
III	0.5	3	1	1	1	3	1	1.5	0.5	1	1	0.20	-0.06	0.48	-0.13
IV	0.5	1	3	1	1	3	1	1.5	0.5	1	1	0.33	0.36	0.39	1.03
V	0.5	1	1	2	1	3	1	1.5	0.5	1	1	0.109	-0.19	-0.18	0.93
VI	0.5	1	1	1	2	3	1	1.5	0.5	1	1	1.38	0.66	0.58	2.60
VII	0.5	1	1	1	1	5	1	1.5	0.5	1	1	2.12	1.88	0.27	3.23
VIII	0.5	1	1	1	1	3	3	1.5	0.5	1	1	3.03	2.57	1.25	4.39
IX	0.5	1	1	1	1	3	1	3	0.5	1	1	-0.47	-0.49	-1.98	1.56
X	0.5	1	1	1	1	3	1	1.5	1.5	1	1	0.32	-0.21	-0.87	1.98
XI	0.5	1	1	1	1	3	1	1.5	0.5	2	1	0.35	0.14	-0.91	0.26
XII	0.5	1	1	1	1	3	1	1.5	0.5	1	7	0.25	-0.09	0.53	0.35

Nusselt Number-

The rate of heat transfer in term of Nusselt number at the upper plate ($z^*=h$) of the channel is given by-

$$Nu(u) = \left[\frac{qL}{K(T_1^* - T_0)} \right]_{z^*=h} = - \frac{L}{K(T_1^* - T_0)} K \left(\frac{\partial T^*}{\partial z^*} \right)_{z^*=h} = - \left(\frac{\partial \theta}{\partial z} \right)_{z=1} \dots \dots \dots (4.1)$$

The rate of heat transfer in term of Nusselt number at the lower plate ($z^*=0$) of the channel is given by

$$Nu(l) = \left[\frac{qL}{K(T_1^* - T_0)} \right]_{z^*=0} = - \frac{L}{K(T_1^* - T_0)} K \left(\frac{\partial T^*}{\partial z^*} \right)_{z^*=0} = - \left(\frac{\partial \theta}{\partial z} \right)_{z=0} \dots \dots \dots (4.2)$$

Where q is the quantity of heat exchanged between the plate and fluid per unit time, L is the characteristic length and-

$$\left(\frac{\partial \theta}{\partial z} \right)_{z=1} = A_6 \sqrt{(S + N) Pr} e^{\sqrt{(S+N)Pr}} - A_5 \sqrt{(S + N) Pr} e^{-\sqrt{(S+N)Pr}} \dots \dots \dots (4.3)$$

$$\left(\frac{\partial \theta}{\partial z}\right)_{z=0} = A_3 \sqrt{(S+N)Pr} - A_5 \sqrt{(S+N)Pr} \dots \dots \dots (4.4)$$

Where A₂ to A₆ are the constants and given in the **Appendix-1(A)**.

Table-1.2 the numerical values of Nusselt number at both the plates of the channel for different values of physical parameters

S. No.	S	N	Pr	Nu(l)	Nu(u)
I	0.5	1	1	0.78	1.45
II	1	1	1	0.73	1.59
III	1.5	1	1	0.67	1.72
IV	0.5	3	1	0.59	1.96
V	0.5	5	1	0.45	2.38
VI	0.5	1	7	0.25	3.25

Sherwood Number

The rate of mass transfer in term of Sherwood number at the upper plate (z* = h) of the channel is given by

$$Sh(u) = \left[\frac{M_w L}{D_w (C_1^* - C_0)} \right]_{z^*=0} = - \frac{1}{D_w (C_1^* - C_0)} D_m \left(\frac{\partial C^*}{\partial z^*} \right)_{z^*=h} = - \left(\frac{\partial C}{\partial z} \right)_{z=1} \dots \dots \dots (5.1)$$

The rate of mass transfer in term of Sherwood number at the lower plate (z* = 0) of the channel is given by

$$Sh(l) = \left[\frac{M_w L}{D_w (C_1^* - C_0)} \right]_{z^*=0} = - \frac{1}{D_w (C_1^* - C_0)} D_m \left(\frac{\partial C^*}{\partial z^*} \right)_{z^*=0} = - \left(\frac{\partial C}{\partial z} \right)_{z=0} \dots \dots \dots (5.2)$$

Where D_m is the mass diffusivity, M_w is the quantity of mass transferred between the plate and fluid per unit time, L is the characteristic length and

$$\left(\frac{\partial C}{\partial z}\right)_{z=1} = A_3 \sqrt{\gamma e^{\sqrt{\gamma}}} - A_2 \sqrt{\gamma e^{-\sqrt{\gamma}}} \dots \dots \dots (5.3)$$

$$\left(\frac{\partial C}{\partial z}\right)_{z=0} = A_3 \sqrt{\gamma} - A_2 \sqrt{\gamma} \dots \dots \dots (5.4)$$

Where A₂ and A₃ are the constants and given in the **Appendix-3(A)**.

Table-1.3 The numerical values of Sherwood number at both the plates of the channel for different values of physical parameter.

S. No.	γ	Sh(l)	Sh(u)
I	1	0.85	1.31
II	3	0.63	1.84
III	5	0.48	2.28

Results and Discussion

The problem of free convection chemical reactive fluid flow through horizontal parallel plates channel enriched through saturated porous. The presence of heat source and presence of hall has been considered and analytical solution for velocity, the temperature and concentration area are obtained. Effect of various important parameters is presented by graphing. Coefficient of skin-friction, the lower and upper plate of the channel has the Nusselt number and Sherwood numbers.

It is celebrated by the table- (1.1) that the x-factor of the coefficient of the skin-friction on lower plate $(C_{fx})_{z=0}$ increases with an increase of pressure gradient, thermal and mass boom; while its source decreases with a small increase of heat source parameters, radiation parameters, chemical reaction parameters, rotational parameters, Hartman number, permeability parameter, hall current parameter and trendal number. The y-component coefficient of coefficient of skin friction on lower plate $(C_{fy})_{z=0}$ Grows with increase pressure gradient, thermal boom, mass boom and heat source parameter; While radiation parameters, it decreases with the increase in the chemical reaction parameter, rotational parameter, heartman number, permeability parameter, hall current parameters and Prandtl numbers.

The x-component $(C_{fx})_{z=1}$ of coefficient of skin-friction on top plate the heat source parameter increases with the increase of pressure gradient, mass boom and the prandtl number, while the radiation parameter decreases with chemical reaction. Parameters, rotation parameters, thermal boom, heartman number, permeability parameters and Hall current parameters. The y-component of coefficient of skin-friction upper plate in upper $(C_{fy})_{z=1}$ increases pressure gradient, increases with the increase of mass boom and thermal boom; while adverse behavior is observed for the heat source parameter, radiation parameters, chemical reaction parameters, rotation parameters, heartman Number, permeability parameter, hall current parameter and prandtl number.

It is illustrated with the table- (1.2) that the Nusselt number in the lower plate, the heat source decreases with the increase of parameters, radiation parameters and Prandtl Number whereas adverse behavior is seen for the upper plate.

This table- (1.3) shows that the Sherwood number is on the lower plate when the adverse reaction occurs, the chemical reaction decreases with coefficient of growth in the case of upper plate is observed.

Conclusions-

- 1) The speed of the rotation parameter decreases the speed of the fluid. Therefore growing coriolis force forces forward flow due to pressure shield.
- 2) Due to the current parameters of the hall; Primary and secondary flow is reaching to you high value.
- 3) The temperature of the fluid can also be controlled by giving higher heat values source parameters and radiation parameters.
- 4) Since the destructive chemical solvent limit removes the thickness of the layer; such mass transfer becomes more of the increasing value of the chemical reaction parameter.

Such a fluid flow model contains important applications in magnetohydrodynamic (MHD) power generator and pump, aerodynamic heat, accelerator, electrostatic polymer technology, petroleum industry, purification and precipitation of crude oil design of cooling system with fluid droplets, spray, liquid metal, and centrifugal separation of substance from fluid and flow meter.

MHD flow of non-newtonic fluids is very important through porous medium especially in the fields of agricultural engineering for irrigation processes; To study petroleum transportation in petroleum technology; For chemical engineering filtration and purification process. Therefore it is proposed that this research work for many non-Newtonian can be extended in the same direction by future researcher's liquid substance.

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Appendix 1(A)-

$$\begin{aligned}
 A_1 &= (e^{-\sqrt{\gamma}} - e^{\sqrt{\gamma}}), & A_2 &= \frac{1}{A_1}, & A_3 &= \frac{1-A_2e^{-\sqrt{\gamma}}}{e^{\sqrt{\gamma}}} \\
 A_4 &= (e^{-\sqrt{(S+N)Pr}} - e^{\sqrt{(S+N)Pr}}) & A_5 &= \frac{1}{A_4}, & A_6 &= \\
 & \frac{1-A_4e^{-\sqrt{(S+N)Pr}}}{e^{\sqrt{(S+N)Pr}}} & & & & \\
 A_7 &= \cos \frac{\theta_1}{2}, & A_8 &= \sin \frac{\theta_1}{2}, & A_9 &= \\
 & \frac{P(M+K_p)}{(M+K_p)^2+4R_0^2}, & & & & \\
 A_{10} &= \frac{2PR_0}{(M+K_p)^2+4R_0^2}, & A_{11} &= S + N - K_p - M, & A_{12} &= \frac{Gr A_6 A_{11}}{A_{11}^2+4R_0^2},
 \end{aligned}$$

$$\begin{aligned}
 A_{13} &= \frac{2R_0GrA_6}{A_{11}^2+4R_0^2} & A_{14} &= \frac{A_5GrA_{11}}{A_{11}^2+4R_0^2} & A_{15} &= \frac{2R_0GrA_5}{A_{11}^2+4R_0^2} \\
 A_{16} &= D^2 - M - K_p & A_{17} &= \frac{A_5GcA_{11}}{A_{16}^2+4R_0^2} & A_{18} &= \frac{2R_0GcA_3}{A_{16}^2+4R_0^2} \\
 A_{19} &= \frac{A_2GcA_{16}}{A_{16}^2+4R_0^2} & A_{20} &= \frac{2R_0GcA_2}{A_{16}^2+4R_0^2} \\
 A_{21} &= A_9 - A_{12} - A_{14} - A_{17} - A_{19}, & A_{22} &= A_{10} - A_{13} - A_{15} - A_{18} - A_{20}, \\
 A_{23} &= A_9 - A_{12}e^{\sqrt{(S+N)Pr}} - A_{14}e^{-\sqrt{(S+N)pr}} - A_{17}e^{\sqrt{\gamma}} - A_{19}e^{-\sqrt{\gamma}}, \\
 A_{24} &= A_{10} - A_{13}e^{\sqrt{(S+N)Pr}} - A_{15}e^{-\sqrt{(S+N)pr}} - A_{18}e^{\sqrt{\gamma}} - A_{20}e^{-\sqrt{\gamma}} \\
 A_{25} &= e^{-A_7} \text{Cos}A_8 - e^{A_7} \text{Cos}A_8, & A_{26} &= e^{A_7} \text{Sin}A_8 - e^{-A_7} \text{Sin}A_8, \\
 A_{27} &= A_{23} - A_{21}e^{A_7} \text{Cos}A_8 - A_{22}e^{A_7} \text{Sin}A_8, \\
 A_{28} &= A_{22}e^{A_7} \text{Cos}A_8 - A_{21}e^{A_7} \text{Sin}A_8 - A_{24}, \\
 A_{29} &= \frac{A_{28}A_{26} - A_{27}A_{25}}{A_{25}^2 + A_{26}^2}, & A_{30} &= \frac{A_{28}A_{25} + A_{27}A_{26}}{A_{25}^2 + A_{26}^2}, & A_{31} &= -A_{21} - A_{29}. \\
 A_{32} &= A_{22} + A_{30}, & A_{33} &= A_{31}^2 (A_7 e^{A_7} \text{Cos}A_8 - A_8 e^{A_7} \text{Sin}A_8) - A_{32}^2 (A_7 e^{A_7} \text{Cos}A_8 - A_8 e^{A_7} \text{Sin}A_8) \\
 &+ A_{29}^2 (-A_7 e^{-A_7} \text{Cos}A_8 - A_8 e^{-A_7} \text{Sin}A_8) + A_{30}^2 (-A_7 e^{-A_7} \text{Cos}A_8 - A_8 e^{-A_7} \text{Sin}A_8) \\
 &- A_{12}\sqrt{(S+N)Pr} e^{\sqrt{(S+N)Pr}} + -A_{14}\sqrt{(S+N)Pr} e^{-\sqrt{(S+N)Pr}} - A_{17}\sqrt{\gamma}e^{\sqrt{\gamma}} + A_{19}\sqrt{\gamma}e^{-\sqrt{\gamma}}, \\
 A_{34} &= A_{31}^2 A_7 - A_{32}^2 A_7 - A_{29}^2 A_7 - A_{30}^2 A_7 - A_{12}\sqrt{(S+N)Pr} - A_{14}\sqrt{(S+N)Pr} - A_{17}\sqrt{\gamma} + A_{19}\sqrt{\gamma}, \\
 A_{35} &= A_{31}^2 (A_7 e^{A_7} \text{Sin}A_8 - A_8 e^{A_7} \text{Cos}A_8) - A_{32}^2 (A_7 e^{A_7} \text{Sin}A_8 - A_8 e^{A_7} \text{Cos}A_8) \\
 &- A_{13}\sqrt{(S+N)Pr} e^{\sqrt{(S+N)Pr}} + A_{15}\sqrt{(S+N)Pr} e^{-\sqrt{(S+N)Pr}} - A_{18}\sqrt{\gamma}e^{\sqrt{\gamma}} + A_{20}\sqrt{\gamma}e^{-\sqrt{\gamma}}, \\
 A_{36} &= A_{31}^2 A_7 - A_{32}^2 A_7 - A_{29}^2 A_7 - A_{30}^2 A_7 - A_{13}\sqrt{(S+N)Pr} - A_{15}\sqrt{(S+N)Pr} - A_{18}\sqrt{\gamma} + A_{20}\sqrt{\gamma}, \\
 &*****
 \end{aligned}$$

A REVIEW AND STUDY OF MECHANICAL PROPERTIES OF TYRE COMPOSITE

Mr. Manoj Kumar Tamar

Research Scholar at Institute of Technology & Management, Aligarh

Abstract-

Solid waste management is one of the major environmental issues in the world. Waste tires are becoming a major environmental problem. Every year a large amount of waste tires is produced. These tires are thermoset and are almost resistant to biological degradation. World annually, nearly 13.5 million tons of waste tires emerge. Analysis shows that there is almost 1 million tonnes of tire scraps in India. These reserves are dangerous due to environmental hazards, fire hazards and provide breeding grounds for mosquitoes. In ways such as landfill, pyrolysis and incineration, the deficiencies in the disposal of waste tires encouraged research on waste tires and recycling techniques. Thus, recycling waste tires is a major challenge for both environmental and economic reasons. Several approaches have been proposed to deal with the problem of used tires, such as converting it into a solid fuel burner into tire-derived fuel, using pyrolysis to recover valuable chemical components, non-tire applications including and using them for various rubbing. Filler in plastic / hardening To obtain impact-resistant plastic and thermoplastic alkometers, rubber wastes can be used extensively by adding waste rubber to the plastic. Typically, there are ground for small particles which go into useless tire ground tire rubber (GTR), which are still thermoset. Recycled rubber chips have been used in asphalt concrete. The use of recycled tire rubber in portland cement concrete is an attractive choice. A technical and economically attractive alternative is the use of recycled tire rubber in the production of tire rubber particulate composites.

Keywords- *Composites, Waste Tyre Rubber, Recycled Tyre Rubber & Method*

Intoduction-

One of the various problems faced by mankind in the 21st century is the crisis of waste disposal management. Environmental pollution is an undesirable change in the physical, chemical and biological characteristics of our air, water and land. As a result of more population, rapid industrialization and the increasing use of transport vehicles, the earth is filled with various pollutants which are released as sub-products. In addition, the used tires have become one of the major waste in the world. Large number of transport vehicles are being used in large numbers throughout the world. Now one day, plastic and rubbers are used extensively in different areas. As polymer materials are not easily decomposed, disposal of their wastage causes a serious environmental problem.

It is estimated that in a year, 2.7 billion waste tire rubber is produced globally; 875 million waste waste is produced by the United States, 600 million waste tires are produced by European countries, 370 million are produced by Australia and 270 million garbage tires are produced by China and India, respectively. Fig. 1.1 indicates that according to the EU strategy, 11% postconsumer tires are exported, 21% recycled, 22% energy recovery, 12% retreading and 34% illegal tire dump (loan 2013) landfill, stockpaid Or are dumped. The waste tires and other rubber products made from various elastomers are one of the biggest sources of pollution and are said to take immediate remedial action.

Composites

The composite material is engineering material made up of two or more component materials and is a single component. There are two categories of component content: matrix, and reinforcement. The matrix material surrounds and supports the reinforcement content while maintaining its relative positions. Reinforcement provides its special mechanical and physical properties to increase matrix properties. Typically, composites can be divided into the following categories: such as matrix matrix composites (MMCs), ceramic matrix composites (CMCs), polymers matrix composites (PMCs), the nature of the matrix and the type of processes.

Waste Tyre Rubber (WTR)

Scrap vendors make important contributions in the production of tire waste. Automobile tires, after the completion of their working life, wear out and have to relinquish it and it is estimated that on average, one tier is used per person per person worldwide. Used tires are a daunting problem, because the tire has almost unlimited life span. Waste tire rubber contaminates soil, water and air and it is confirmed by the following picture 1.3, Figure 1.4 and Figure 1.5. In response to the environmental problems and health hazards generated by countless uncontrolled and abandoned scrap tire hemisphere worldwide, most industrialized countries have prepared a legal framework to resolve this issue. After landfill restrictions are imposed, there is a possibility of legally or illegally scrap tire dumping and dumping (Adhikari 2000 and Senthil 2013)

The laws of country and foreign are different in the country, but the main thrust of such a law is to remove the abandoned piles, to provide the newly generated waste tires for the environmentally safe disposal and through the use of government grants Support for new applications for tire-derived content. . Focusing on the rapid recycling of waste tire rubber (WTR), only 21% and the transportation of transport vehicles, thereby increasing the WTR growth rate for the coming years, especially in India. It is a position to control or control the rubber articles necessary to increase the level of use of WTR recycling.

Literature Review-

According to Ju-Young An, Jong-Moon Park, Hyeon-Jun, Byeong-Ha Jeong, Ho-Sung Jang, Jin-Ui Park, Bong-Seok Kim, Myung-Hoon Oh (2013) The tyre recycling is the

process of recycling vehicles tyres that are no longer suitable for use on vehicles due to wear or irreparable damage. Recently, amounts of waste tyres are being raised with development of the automotive industry. In case of Landfill or incineration of waste tyres, environmental pollution and economic problems are causing through waste of resources. As one of the ways to prevent this problems, crushed waste tyre powder used to composite material manufacturing. After physically removed the bead wire from the waste tyres, the waste tyre powder gained mechanical fracturing through crushers and grinders.

According to D. Raghavan and H. Huynh (1998) prepared the recycled tyre rubber-filled cementitious composite. They studied its workability, mechanical properties and chemical stability. Two different shapes of rubber particles were used- one is granules of about 2 mm diameter and other is shreds having sizes 5.5mm×1.2mm and 10.8mm×1.8mm (length × diameter). They reported that the addition of rubber decreases the flexural strength and plastic shrinkage due to cracking in the mortar. The crack length and crack width due to plastic shrinkage were reduced for mortar containing 10.8mm×1.8mm rubber shreds compared with a mortar without shreds.

According to Siddique R., Naik T.R. (2004) The addition of rubber particles in a cementitious matrix may lead to new composite materials with interesting properties. The particle size of the scrap tyres used has a significant effect on many properties.

According to T. H. Panzera, K. Strecker, M. A. O. Assis, K. A. Paine, P. J. Walker. (2009) The smaller rubber particles resulted in a lower density and apparent porosity, as well as the highest mechanical compressive strength of the composites.

According to Nehdi, M. and Khan, A. (2001) represented the overview of engineering properties and potential applications of cementitious composites containing recycled tyre rubber. They reported about the effect of using rubber in concrete on density (unit weight) and on air content. Crumb rubber of different sizes is used in the concrete. Due to the low specific gravity of rubber, the unit weight of rubcrete mixtures decreases as the percentage of rubber increases.

According to Gintautas Skripkiūnas, et al. (2009) reported damping properties of concrete with rubber waste additives. The influence of rubber waste additive on hardened concrete damping characteristics and strength properties were evaluated. Compressive and flexural strength of concrete are decreased with increasing tyres rubber waste additive amount. The addition of rubber waste to concrete decreases the dynamic modulus of elasticity but increases damping decrement of the concrete. The amount of rubber waste has more noticeable effect on concrete damping properties than particles size distribution. He suggested that concrete with rubber waste can be used for isolation of structure-borne-noise in buildings, foundations and industrial floors.

Paulo J. R. O. Nóvoa, et al. (2006) reported mechanical performance of polyester resins modified with powder from scrap tyre rubber. A low reactivity unsaturated polyester resin (UPR), containing 39 wt % styrene was used in this investigation. A constant rubber powder content (5%) was used throughout all modified resin systems. From flexural properties and Charpy impact behaviour of the fully cured systems it is clear that all

composite systems showed a systematic decrease in performance. There appears to be a small positive shift in flexural properties for system, where a higher pre-treatment temperature was involved. They also reported that toughness can be improved if rubber is purified prior to utilization.

Chan Wen Shan, et al. (2012) used the coir fibers and tyre particles as fillers reinforced in the flexible polyurethane (PU) foams and specimens were developed and analyzed. The characteristics of fillers were examined. They prepared five types of flexible PU foam composites with 2.5wt% of fillers in combination of coir fibers only, tyre particles only, and combined of both. The coir is treated with 5% NaOH and was used to reinforce the flexible PU foams as compared with untreated coir due to a good bonding may obtained in between matrix and fibers. There was no any treatment process selected for tyre particles.

Recycled Tyre Rubber Particles

Recycled tire rubber particles are collected from the surrounding tire retreading center in Aligarh. Tires of trucks, buses, cars and tractors are kept in retreating centers. The grinding wheel of the tire is grinding, which is made of steel wires in radial directions. These wires causes abrasion on the tyre surface and small particles are generated and a rough surface on the tyres is resulted. This surface is now ready for retreading. The particles size between 100-200 μ m is obtained using two sieves of 100 μ m and 200 μ m successively. Recycled tyre rubber particles are used as reinforcing agent. Particles are black in colour.



Figure 1: Recycled Tyre Rubber Particles

Method of Specimen Preparation

Samples are fabricated using open mold casting techniques. For the size of 300mm \times 100mm \times 6mm size, compression test sampling for molding of tensile and flexural test samples, sample for sample casting 100mm \times 100mm \times 25.4 mm and test sample 300mm \times 100mm Damp-ing sample for 4 mm. Are making. To remove the mold plate plate easily, the interior of the mold is coated with petroleum jelly. Epoxy PG100 and Hardner SY 31 (B) are added in the ratio of 10: 1. A similar mixture is prepared to insert sample plates. Beams are prepared by mixing different weight percentages or beams (10%, 20% and 30%) in 100-200 square meters of recycled tire rubber particles in the epoxy and hardener mix and mixing them in the same molded molds. Are. Plates are treated at room temperature (about 300C) for

24 hours. After proper treatment, the plates are carefully taken out of the mold. Different sizes of the sample are then cut from mixed plates according to the test standards.

Tensile Test Specimens

Figure 2 shows tensile test samples of various structures of rubber particles i.e 10%, 20% and 30% (by weight) with epoxy resin of tire rubber reinforcement.



Figure 2: Specimens for Tensile Test

Compressive Test Specimens

Figure 3 shows specimens for compressive test. These specimens are made of 10%, 20% and 30% (by weight) reinforcement of tyre rubber particles with epoxy resin. The numbering 10, 20 and 30 on the specimens is representing the %wt. reinforcement of tyre rubber particles.



Figure 3: Specimens for Compressive Test

Flexural Test Specimens

Figure 4 shows the flexural test specimens prepared by reinforcing 10, 20 and 30 percentages (by weight) of tyre rubber particles in epoxy resin.



Figure 4: Specimens for Flexural Test

Damping Test Specimens

Here a control specimen i.e. pure epoxy specimen, along with 10, 20 and 30 wt. percentage of reinforcement of tyre rubber particles, is also prepared. Following figure shows these specimens.

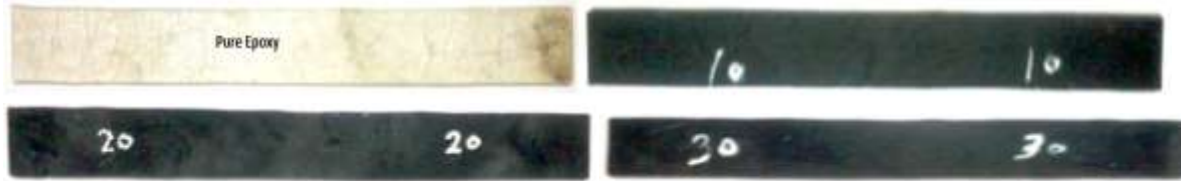


Figure 5: Specimens for Damping Test

Results-

Tensile test-

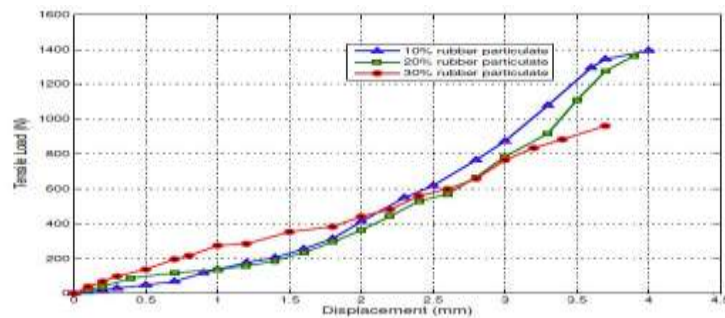


Figure 6: Load/Displacement curves for tensile test with variation of tyre rubber particles wt. percentage

The load/displacement graph shows that initially load is more for the 30 wt% rubber particulate composite but 30% rubber particulate composite breaks at lowest of the three loads i.e. at 961.38 N. 10% rubber particulate composite breaks at maximum load. Hence increasing the particulate decreases the load at fracture.

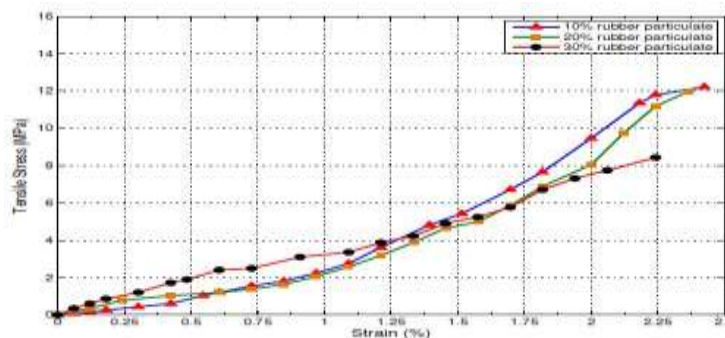


Figure 7: Stress/Strain curves for tensile test with variation of tyre rubber particles wt. percentage

Here the tensile stress is decreasing on increasing the particulate wt. percentages. Tensile stress for 10 wt % rubber particulate composite decreases by about 85% of the pure epoxy. The decrease in 20% and 30% rubber particulate composite is recorded as 86% and 90%.

Compressive Test

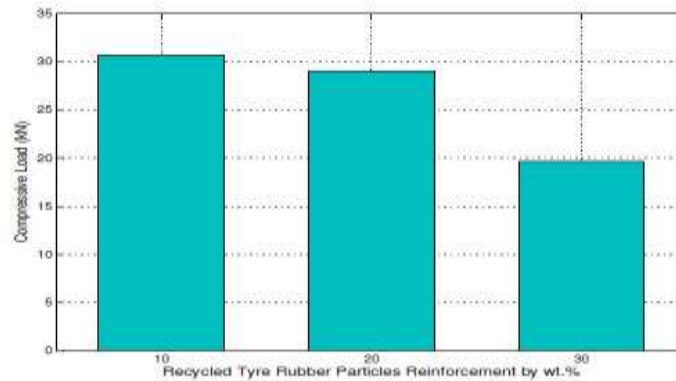


Figure 8: Compressive Load at break with variation of tyre rubber particles reinforcement by wt. percentage

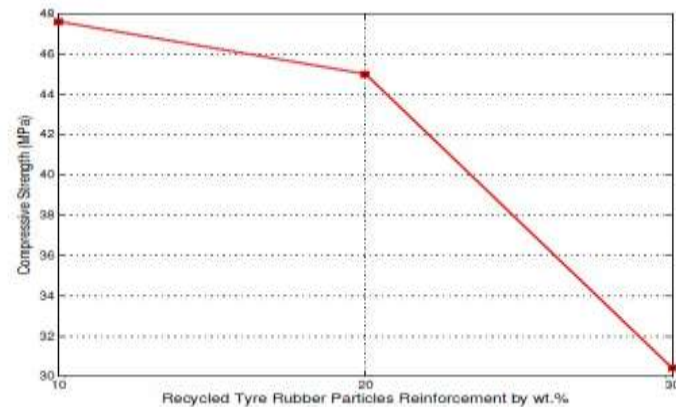


Figure 9: Compressive Strength with variation of tyre rubber particles reinforcement by wt. percentage

Compressive strength is also decreasing on increasing the reinforcement of rubber particulates. It has been seen that 75%, 76% and 83% decrease in compressive strength are occurred for 10%, 20% and 30% rubber particulate composites respectively as compared to that of pure epoxy (compressive strength 190 MPa). 10 wt% rubber particulate composite have high value of compressive strength (47.6 MPa) of these three configurations.

Flexural Test

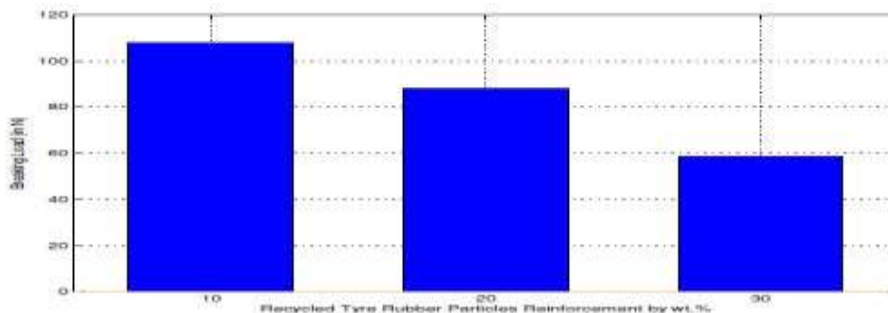


Figure 10: Flexural Load at break with variation of tyre rubber particles reinforcement by wt. percentage

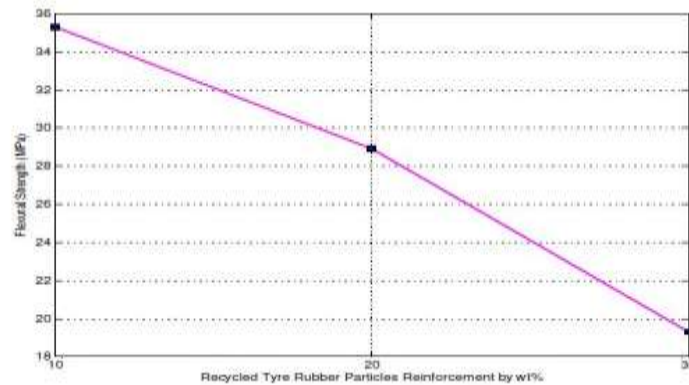


Figure 11: Flexural Strength at break with variation of tyre rubber particles reinforcement by wt. percentage

Here flexural strength is decreasing on increase in the tyre rubber particulate reinforcement in the composite. A decrease of 68%, 74% and 82% in flexural strength is noted as compared to that of pure epoxy (flexural strength 112 MPa).

Damping Test

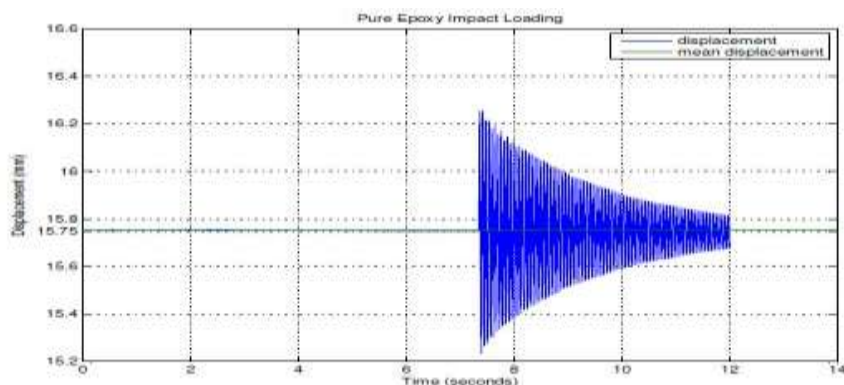


Figure 12: Time domain response of the Pure Epoxy beam in Impact damping method

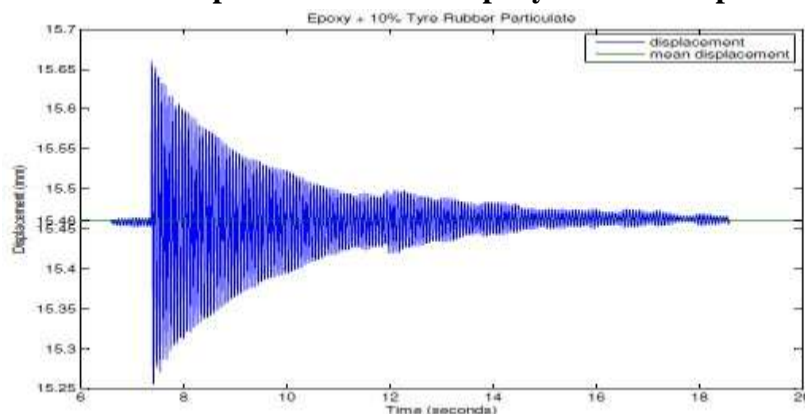


Figure 13: Time domain response of Epoxy + 10% (by wt.) Tyre Rubber particulate beam

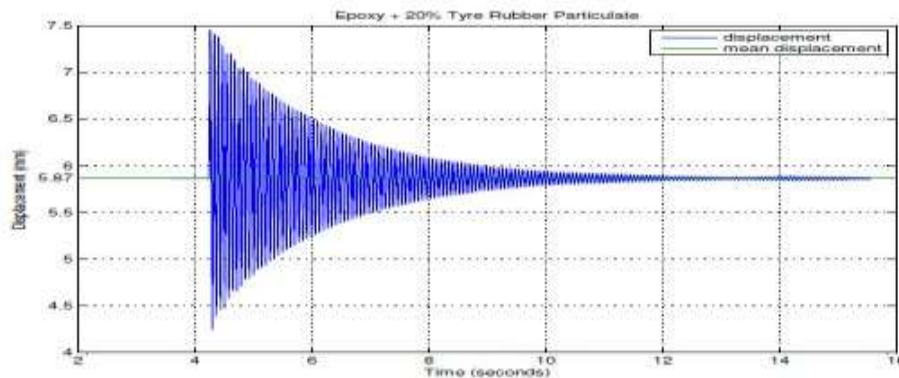


Figure 14: Time domain response of Epoxy + 20% (by wt.) Tyre Rubber particulate beam

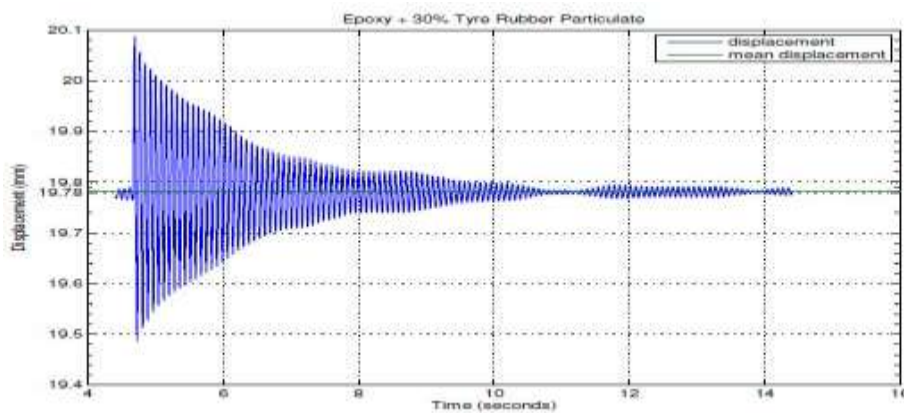


Figure 15: Time domain response of Epoxy + 30% (by wt.) Tyre Rubber particulate beam

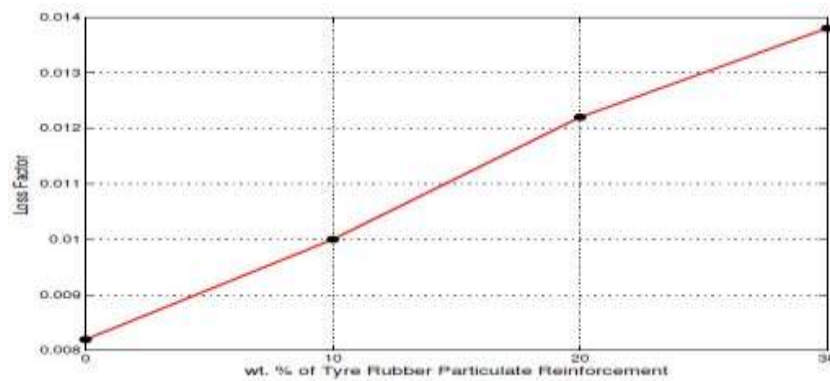


Figure 16: Variation in Loss Factor with varying wt. % of Tyre Rubber Particulate

Conclusions

The focus of this thesis is to use the waste material (tyre rubber) in preparing composite material, which can be used in many applications. This thesis focuses on the effective utilization of environmentally hazardous waste tyres. The composites are successfully prepared by reinforcing different weight percentages of tyre rubber particulates with epoxy matrix. The mechanical behavior of prepared composites is experimentally determined. Structural properties such as tensile, compressive, flexural, and dynamic property such as damping characteristics are determined. It has been observed that the difference in weight percentage of particle reinforcement plays an important role in

influencing these properties. In the present case, with overall increase in the restructuring of tire rubber particulate, tensile, compressed and flexural strength in nature is decreasing. Tensile, compressive and flexural strength are maximum for 10% (by weight) tyre rubber particulate reinforcement composite. Viscoelastic materials have good damping characteristics, which can be used for vibration suppression. Tyre rubber particles in particulate composite with epoxy matrix increase the loss tangent (loss factor). In the present case, logarithmic decrement, damping ratio, and loss factor are determined for various weight percentages of tyre rubber particulate reinforcement in the composite for impact damping test. Loss factor is maximum for 30% (by weight) tyre rubber reinforcement composite. The prepared composite material can be used in many applications such as flooring, playground surfacing, isolation etc. Fabrication of brake pad in automotive field is an ongoing process. The prepared composite material has lower density as compared to metal particulate reinforced composites.

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“MOTIVATIONAL FACTORS OF WOMEN ENTREPRENEURS”

By

DR. RATNESH CHANDRA SHARMA

PROFESSOR

MMIM, Maharshi Markandeswar (Deemed to be University), Mullana-Ambala

INTRODUCTION

Entrepreneurship is an important aspect of the business and industrial growth of a modern nation. The spirit of Entrepreneurship is marked by enthusiasm, persistence and ability to seek opportunities. It is an instrument of change. But Female Entrepreneurship has not a very major share in the entrepreneurship sector. In today era Women Entrepreneurs have been designated as new engines for the growth. They are rising stars of the economies in developing countries to bring prosperity and welfare. A variety of stakeholders has pointed at them as an important “untapped source” of economic growth and development.

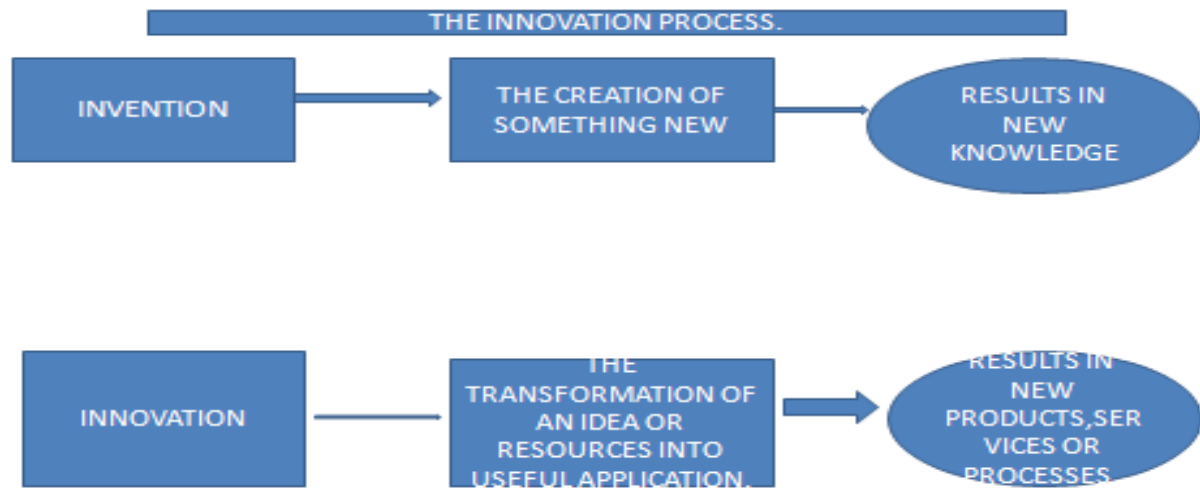
Objective of the study

- 1.To study the Socio- economic profile of women who want to become entrepreneurs.
- 2.To evaluate the factors responsible for encouraging women to become entrepreneurs.

WOMEN ENTREPRENEURS

Entrepreneurship by character is a Dynamic function which allows itself to evolve in a very perceptive manner as the social processes are adapted to the conditions of needs. Such needs aroused through entrepreneurial efforts thus help in enhancing the economic conditions of the population of the country. Globalization process factors such as flexibility, speed and innovation contributed entrepreneurship to emerge as a key player in driving economic development. It constitutes an important input in the process of economic development. Economic growth draws its vital nourishment from a stream of fresh ideas, inventions and innovations. Without Entrepreneurial functions perceptions of the opportunity based on an invention, promotion and in general the modern development would have been inconceivable.

Entrepreneurship¹ has led balanced regional development. It is an instrument of change. It is a (new business formation) as a Key element within the development and revitalization process of lagging areas. This very element transforms technological possibility into technological facts. For healthy development in agriculture, industry or any other sphere of an economy there must be men/women who possess drive, ambition, foresight and imagination to break through. Traditional barriers overcome social *interalia* and transforms theory into practice. If the many shortages which impede the progress of developing countries one of the most serious limiting factors on their economic development is the acute shortage of Entrepreneurs. Economic development is the last analysis, the outcome of human decisions and activity. As the center of the process stands man as organizer of the community's resources as worker and as user of the goods produced.



From time immemorial man's Endeavour has been for the benefit of the society. In recent times the most important factor contributing to the advancement has been industrialization by bringing about social and economic development of the society. Entrepreneurs are the real heroes of economic life. Developed nations like U.S.A, U.K and JAPAN have realized the importance of enterprise.

Entrepreneurship is a phenomenon it is recognized in India through TATAS, AMBANIS AND NOW ADANIS. These are the leaders who left an indelible Mark on the history of India.

TATA Group, on industry, on the community and on the country. Much of their enterprise was an expression of self belief that the country could manufacture steel, generate power and use modern technologies. From building India's first luxury hotel, to pioneering civil aviation, to taking the lead in the development of harmonious industrial relations in the country.

The vision of Entrepreneurship also emphasized the importance of returning to society the wealth that was generated. Entrepreneurship is the core of economic development. Entrepreneur is a key factor of entrepreneurship. In present time women are an emerging economic force. Women constitute the family, which leads to society and family. Social and economic development of women is necessary for development of any country. Every woman wants to start their own business but can not success in our Indian environment in way in which it should be. Due to changing environment, now men are easily acceptable the women entrepreneurial opportunity. Our increasing service sector also promotes the women entrepreneurship. Purpose of the study is to find out various motivating and de-motivating internal and external factor of women entrepreneurship. It will also suggest the investment and interesting working time of women.

Entrepreneurship refers to setting a new business to take advantages from new opportunities. Entrepreneur is the key factor of entrepreneurship and now women are successful in this as they have qualities desirable for entrepreneurship development. Entrepreneurship is a suitable profession for women than regular employment.

Problems Faced By Women Entrepreneurs: Indian women entrepreneurs face the following challenges in setting up and running business units:

A) Less Confidence: Women entrepreneurs are not confident about their strengthened competence. Their family members don't stand by their entrepreneurial Growth. In recent

years, though the situation is changing, yet the women have to Face further change for increased entrepreneurial growth.

B) Non-Availability of Finance: They have lack of access to funds, because they do not possess any tangible asset and credit in the market. Very few women have the tangible property in hand. So, they are suffering from inadequate financial resources and working capital.

C) Socio-cultural Disturbance: Women have to manage both home and business duties at a time. Such obligations may become a great barrier for some women in succeeding as an entrepreneur.

D) Lack of Managerial Skills: It is argued that women entrepreneurs have low level of management skills. They have to depend on other persons like office staff and middle men to get things done, particularly marketing function. They are at the mercy of middle men who pocket major part of the surplus or profit. Because of social conditioning, women are discouraged to develop the capacity of mobility and confidence required for marketing function. So, they lag behind in this domain.

E) Competition from Male Entrepreneurs: Competition from male counterparts develops hurdles to women entrepreneurs in business management process. Women entrepreneurs have to face the constraints of competition form male entrepreneurs due to less organizational skills than men.

F) Production Problem: Production in a manufacturing enterprise involves coordination of a number of activities. While some of these activities are in control of entrepreneur, there are others over which she has little control. Improper coordination or unintended delay in execution of any activity is going to cause production problems in the industry.

G) Lack of Knowledge of Availability of Raw Materials: For running business, Entrepreneur requires having knowledge of alternative source of raw material availability and high negotiations skills. Women entrepreneurs have lack of such knowledge and skills which affect their business adventures.

H) Lack of Education and Awareness: Entrepreneurs must have knowledge of latest technological changes; know how, etc for running business efficiently. But it needs high level of education among entrepreneurs. In a country like India, the literacy rate of women is found at low level compared to male population. So, they have not sufficient knowledge of technologies; know how, etc. that affect their business ventures adversely.

I) Low Level of Risk Taking Attitude: One pre-requisite of the entrepreneurial success is risk taking. It is normally believed that women being feminist gender have low risk taking ability. Because of this, they are suppressed by the protected environment and are not allowed most of the time to take any type of risk even if she has capacity to bear it.

J) Mobility Constraint: The Indian society is a conservative society which restricts the mobility of women entrepreneurs. Women are less mobile than men. The confidence to travel day & night and to different regions and States is lacking in women comparing with men.

K) Other Constraints: They are poor self image of women, inadequate motivation, discriminating treatment, lack of freedom of expression, etc.

REVIEW OF LITERATURE

Entrepreneurship is developing and particularly women entrepreneurship, the world over. A number of studies have been undertaken in other countries as well as in India to investigate the various aspects of women entrepreneurship. These studies clearly indicate that women entrepreneurship is indispensable for the overall development of the nation. The general purpose of reviewing the literature of studies is to develop an understanding and insight into

the work already done and areas left untouched or unexplored. These studies also enable to search out many more related problems as suggestions for future research. It is presumed that the survey of such studies will make the preset investigation more direct and to the point. So, the different studies investigating most of the aspects on the subject matter of present study published in the forms of Books, articles and research papers will be studied. The important among them are as following:

Schumpeter: He views Entrepreneurship as an aristocrat character, part of a **Schumpeter (1961)** is arguably the most influential economics of Entrepreneurship. He stressed the view that the individual Entrepreneur embodies the innovation function in society and stands out as leader. Schumpeter rather emphasized the non-utilization qualities of Entrepreneurship and speculated about the unique psychological make-up creative elite in capitalist society that is driven by dream of founding a "Private Kingdom", an intrusive desire to success for the sake of success itself, who feels the joy of creating and delight in reline" (1961: 93-94). He stressed that practical side of Entrepreneurship, arguing that Entrepreneurship are the individuals that get things done in society. (**Schumpeter 1975**).

Eves are having an inner urge to enhance their beauty. Irrespective of the age, every woman wants to look young and beautiful. Hence, the beauty parlours situated in and around Haryana state will have a roaring business provided they cater to the needs of all sections of women. (**Sheela Devi N, 2000**). The social environment of a salon- is a place where cosmetologist and customers talk openly about many subjects including health. (**Felicia M Soloman, 2004**). Just as the majority of research on men was rooted in early trait Psychology and centered on personal Characteristics (**McClelland, 1961, Collins and Moore 1964, Copper 1981**), The overwhelming majority of early research about women Entrepreneurs focused on individual aspects .

Sexton and Kent (1981) that women Entrepreneurs had slightly lower levels of education than female executives. Self determination, expectation for recognition, Self esteem and career goal are the key drivers for taking up Entrepreneurship by women (Moore and Bhuttnen, 1997). The same condition both men and women can be successful Entrepreneurs (**Cohoon et.al. 2010**).

Writers such as **Wolf (1990) and Chapkiss (1986)** have been unambiguously negative about the effects of the 'beauty system' or the 'fashion-beauty complex'. Wolf, for example, describes how eating disorders, the appearance of women in the work place and reproduction amongst other arenas have become subject to the 'beauty myth'. This system of beauty has arisen as a part of a wider backlash to the social, economic and political advances made by women.

Other work has, however, emphasised the complex nature of discourses and practices which regulate the body and produce femininity (**Bordo, 1993; Butler, 1993; Skeggs, 1997**). It needs to be acknowledged that there is room for tension and ambiguity within femininity, not least in the sense that class, age and ethnicity will fundamentally alter the ways in which femininity is experienced and defined (**Gimlin, 1991; hooks 1992**). In our research we have discovered that the beauty industry, its role and the experiences of the women who come into active contact with it is indeed a complex matter?

In approaching this complex area then we broadly agree with Davis' statement that:

"Feminist theory on beauty needs to be grounded; that is, it must take the ambiguous, contradictory, everyday social practices of women as its starting point." (**Davis, 1991**)

RESEARCH METHODOLOGY:

Statement of problem: This study deals with the “**MOTIVATIONAL FACTORS OF WOMEN ENTREPRENEURS.**”

Research design:-

It is the **descriptive research** .The main aim is, to find out the factors responsible for omen to become Women Entrepreneurs.

Sample Design:-

In this research Haryana area is selected as sample area with 200 total women entrepreneurs.

Sample

I have selected Haryana region. For this research study, the Stratified Random Sampling Method

Sample Size: 200 respondents would be taken from four zones of HARYANA. This will be randomly contacted out of four i.e. North, South, East, and West Zones of Haryana.

Ambala:North

Gurgaon: South

Fathabad,Hisar:West

Karnal: East

Random sampling method is used for filling up the questionnaire from employees and employers. 200 respondents are selected on random basis from these 4 zones of Haryana in this region in India. 200 is a good and reasonable sample size for this research study. The questionnaire made for employers is filled up by the 200 Female entrepreneurs.

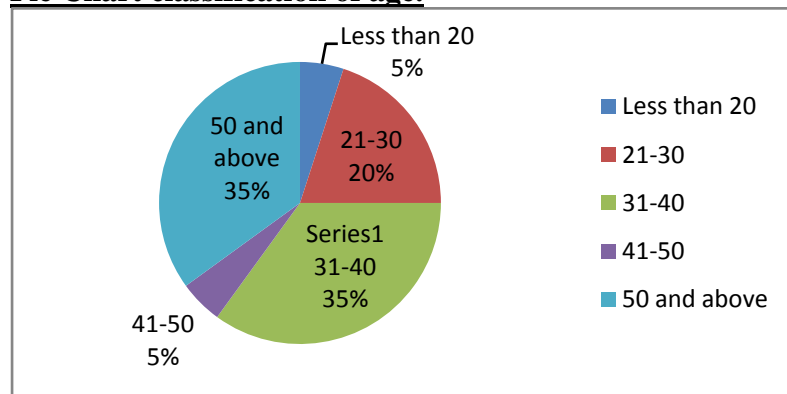
DATA ANALYSIS AND INTERPRETATION:

Presentation and Analysis of Demographic variables

Age Distribution Data Grid

Age in years	No.of Respondents
Less than 20	10
21-30	40
31-40	70
41-50	10
50 and above	70
TOTAL	200

Pie Chart classification of age.



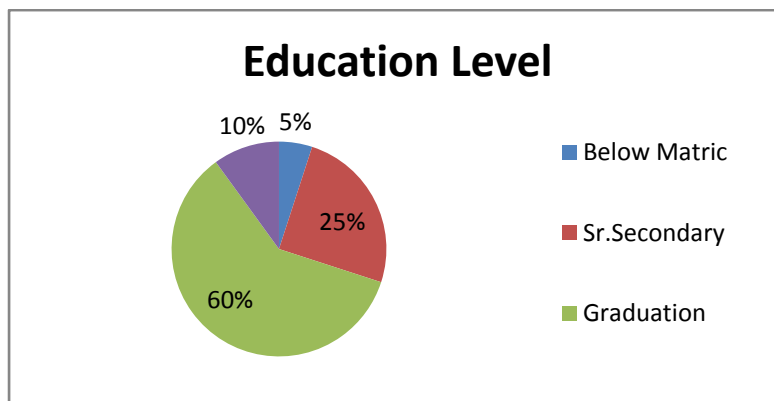
The Demographic profile of respondents shows their age classification that

35% respondents are of age between 31 to 40 and 10 respondents are of age between 41-50 and less than 50. That shows 5% respondents belong to category of 41-50 and less than 20. So mostly people are of age above 50 and above.

Education Level

Education Level	No. of Respondents	Percentage %
Below Matric	10	5
Sr.Secondary	50	25
Graduation	120	60
Post Graduation	20	10

Education Data Grid



This table shows that 60% respondents belong to the category of graduates. 5% respondents belong to the category of below Matric.

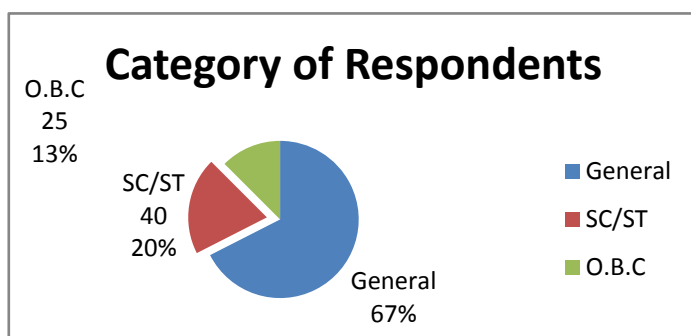
25% respondents belong to the category of Senior secondary education.

10% respondents graduates with post graduation degree.

Analysis and Presentation of Socio- Economic Profile of Women Entrepreneur in Beauty Service Sector.

Caste distribution Data grid

Category	Number of Respondents	Percentage
General	135	67
SC/ST	40	20
O.B.C	25	13



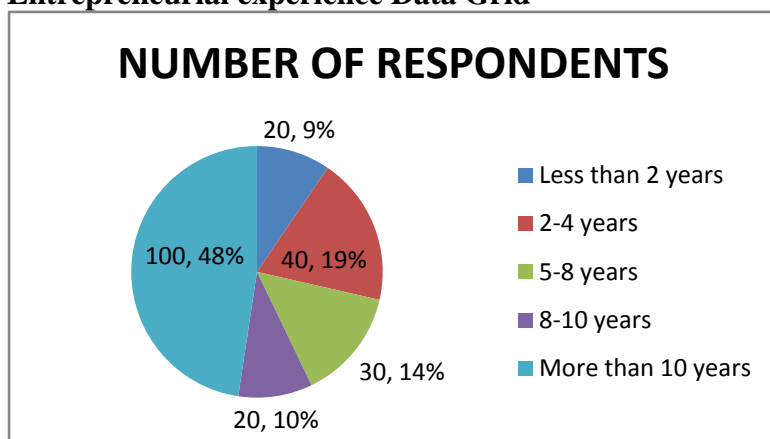
Respondents shows that 67% belong to General category, SC/ST are 40% , O.B.C. are 13 %.So Mostly Entrepreneurs are of General category. So mostly women Entrepreneur belong to General category in this sector.

Caste system shows their classification.

Entrepreneurial Experience

Period of Service	No of Entrepreneurs	Percentage %
Less than 2 years	20	9
2-4 years	40	19
5-8 years	30	14
8-10 years	20	10
More than 10 years.	100	48

Entrepreneurial experience Data Grid

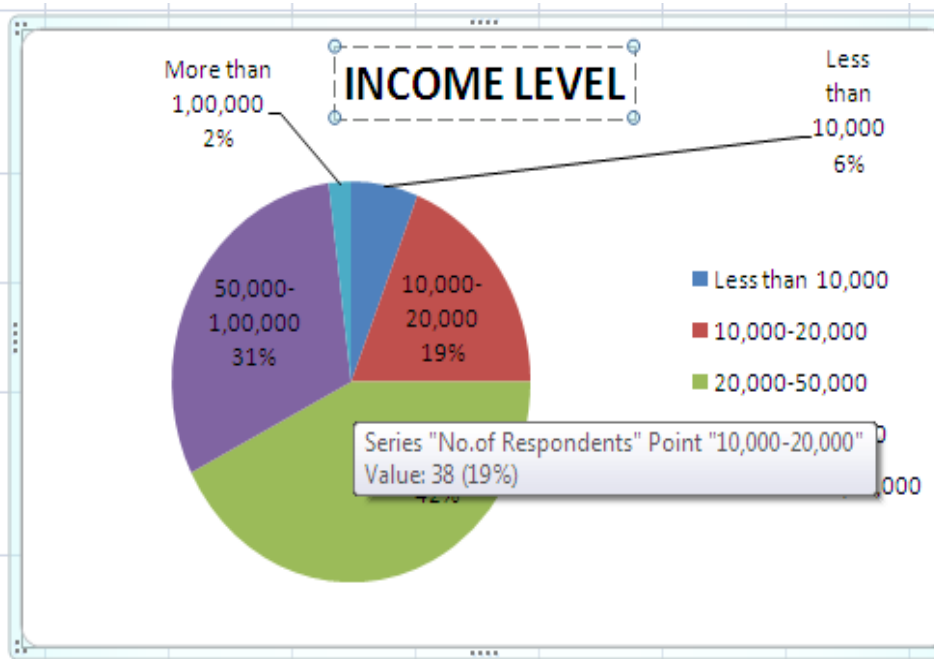


It shows that 50% of respondents have more than 10 years of experience.10% are having experience of 2 to 4 years.20% are having experience of five to eight years.15% are having experience of 5 to 8 years.10% are having experience of 8 to 10 years.

Income level

Salary	No of Respondents	Percentage %
Less than 10,000	12	6
10,000-20,000	38	19
20,000-50,000	85	42
50,000-1,00000	61	31
More than 100000	4	2

Income distribution Data



Income table shows that 42% respondents earn between Rs.20000 to 35000 per month. 6% earn less than 10,000 and 19% earn between Rs.10,000 and 20000.31% respondents earn between Rs.50,000-1,00000.

PRESENTATION AND ANALYSIS of the factors responsible for encouraging women to become Entrepreneurs.

FACTORS	Least Imp	Slightly imp	Moderately Imp	Very imp	Extremely imp
Financial needs	2%	4%	14%	20%	60%
Hobby	3%	5%	40%	50%	2%
Self independence	1	3%	3%	23%	70%

Survival	15	10	32	34	9
Experience	12	10	55	3	20
Rising Demand	10	22	33	28	7
Less investment and more profit	5	32	43	8	2
Skill based	11	15	26	38	10

1.Financial needs: 60% respondents said that financial needs are extremely important and 20% said that financial needs are very important factor for starting their business and none said that it is not important.

2.Hobby: Respondents revealed that 50% say that hobby is very important Factor for starting a business and 40% said that hobby is moderately important for starting a business . 3% respondents said that this factor is least important and 5% said that it is 3% said it is least important.

Self independence: Self independence it is the most important factor and 70% said that it is the extremely important factor for starting their business. Women want to become independent and self reliant. 23% said that it is moderately important.

Survival: 34% said that survival is very important factor.32% said it is moderately important. 9 % it is extremely important.10% said that survival is slightly important factor and 15% said that it is least important.

Experience :Experience is also important factor for starting a business. 55% said that it is moderately important.20% said that it is extremely important factor. 10% said that it is slightly important. 12% said that it is least important and 10 % said that it is slightly important.

Rising Demand : 10% said that it is least important factor for starting a business. 22% said that it is slightly important.33% said that it is moderately important. 28% said that it is very important and 7% said that it is extremely important .

Less investment and more profit:This factor shows that 5% respondents analysed that it is least important factor ,32% said that it is slightly important factor for starting a business.43% said that this factor is moderately important. 8% said that this factor is very important factor and other said that is 2% respondents said that it is extremely important factor for starting a business.

Skill Based: 11% respondents say that skill factor is least important for starting a business, 15% said that it is slightly important and 26% said that it is moderately important.38% said that it is very important and 10% said that it is extremely important. So mostly respondents said that skill factor is Very important factor for starting a business.

ANALYSIS of Objective 2: To evaluate the factors responsible for encouraging women to become entrepreneurs in this sector.

	financialneeds	hobby	selfindependence	survival	experience	Demand	Skill	Inve
1	3.00	5.00	5.00	1.00	1.00	4.00	3.00	
2	4.00	3.00	5.00	2.00	2.00	4.00	4.00	
3	3.00	4.00	4.00	4.00	3.00	4.00	4.00	
4	1.00	2.00	3.00	4.00	1.00	2.00	3.00	
5	2.00	3.00	4.00	3.00	2.00	3.00	4.00	
6	3.00	5.00	3.00	2.00	3.00	5.00	3.00	
7	3.00	4.00	2.00	1.00	3.00	4.00	2.00	
8	3.00	3.00	3.00	2.00	3.00	3.00	3.00	
9	3.00	3.00	4.00	3.00	3.00	3.00	4.00	
10	4.00	2.00	4.00	3.00	4.00	2.00	4.00	
11	4.00	4.00	3.00	3.00	2.00	4.00	3.00	
12	4.00	4.00	4.00	3.00	2.00	4.00	2.00	
13	4.00	3.00	4.00	3.00	2.00	3.00	4.00	
14	4.00	2.00	4.00	3.00	2.00	2.00	4.00	
15	5.00	1.00	3.00	3.00	2.00	1.00	3.00	
16	4.00	2.00	4.00	3.00	2.00	2.00	3.00	

Data grid

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.552
Bartlett's Test of Approx. Chi-Square Sphericity	175.689
Df	28
Sig.	.000

KMO test shows the sample adequacy. Since it is more than .5 so our sample is adequate. We can apply factor analysis to it. So next step is to apply factor analysis to find out the variables which are more important for starting a business.

This table shows the loading factor of different variables.

Variables	Loading Factor
1) financial needs	.567
2) hobby	.766
3) self independence	.682
4) Meaning of survival	.706
5) Experience	.731
6) Demand	.736
7) investment	.592
8) skill	.729

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.054	25.673	25.673	2.054	25.673	25.673
2	1.284	16.045	41.719	1.284	16.045	41.719

3	1.127	14.086	55.805	1.127	14.086	55.805
4	1.043	13.036	68.841	1.043	13.036	68.841
5	.784	9.801	78.642			
6	.750	9.381	88.023			
7	.558	6.974	94.997			
8	.400	5.003	100.000			

Extraction Method: Principal Component Analysis.

Correlation Matrix

		x1	x2	x3	X4	x5	x6	x7	x8
Correlation	x1	1.000	-.165	.133	.265	.196	-.113	.222	.110
	x2	-.165	1.000	-.142	-.169	-.029	.467	-.195	.021
	x3	.133	-.142	1.000	.080	-.025	-.082	.212	.112
	X4	.265	-.169	.080	1.000	.071	-.190	-.008	.456
	x5	.196	-.029	-.025	.071	1.000	-.061	.078	.042
	x6	-.113	.467	-.082	-.190	-.061	1.000	-.133	-.224
	x7	.222	-.195	.212	-.008	.078	-.133	1.000	.048
	x8	.110	.021	.112	.456	.042	-.224	.048	1.000

When we did factor Analysis on these Variables we found that these variables financial needs, hobby,self independence,Meaning of Survival,Experience,Demand,Investment and skill based Among these factors variables four factors are analyzed first 4 have Eigen values more than 1 so they are extracted.

Factors	Eigen Values.
1 Financial needs	2.054
2 Hobby	1.284
3 Self Independence	1.127
4 Meaning of Survival	1.043

So these factors financial needs, hobby ,self independence ,Meaning of Survival are the most important factors for starting a business.These are the Motivators.MOTIVATORS which motivates young women Entrepreneurs to start their business.

Summary and analysis:Impact of technical assistance on Young Entrepreneurs.

Whether Training Motivates the Young Entrepreneurs

c	Time period of training	No of Respondents.
1	6 Months-12 months	100
2	2 year diploma course	50
3	4 or 3 year diploma course	40
4	Not taken any training	10

Ho(null hypothesis):There is no relationship between training and becoming a successful entrepreneur.

H1(alternate hypothesis:There is relationship between training an becoming an entrepreneur.

Test: **Chi square test** to test the null hypothesis.

Training period	Observed frequency	Expected frequency
6 months-12 months	100	50
2year	40	50
3-4 year	50	50
No training	10	50

The formula for chi square is

$$x^2 = \sum \frac{(O-E)^2}{E}$$

Where:

x^2 = is the value for chi square.

\sum = is the sum.

O is the observed frequency

E is the expected frequency.

Calculations:

TRAINING Period	O(Observed frequency)	E(Expected frequency)	O-E	(O-E) ²	$\frac{(O-E)^2}{E}$
6 – 12 mths	100	50	50	2500	50
2 years	40	50	-10	100	2
3-4 years	50	50	0	0	0
No training	10	50	-40	1600	32

Calculated value of chi square = $x^2 = 102$

degree of freedom (d.f) = 3 , Level of significance = 5 %

Table value of chi square is $x^2(.05) = 9.48$

According to the main objective to determine the impact of training as a success factors for women in such entrepreneurial activities and to check the hypothesis in this regard that training is a motivating factor in developing women entrepreneurship we applied chi square test which is a non parametric test results were interpreted that the table value of chi square is less than calculated value. So null hypothesis is rejected and we accept the alternate hypothesis which says that there is a relationship between training and becoming an entrepreneur.

SUMMARY AND ANALYSIS OF ROLE, POLICIES, PROGRAMMES and INSTITUTIONAL NETWORK IN WOMEN ENTREPRENEURSHIP DEVELOPMENT.

Sr. No.	Name of the Bank	Details of SHG's having linked with banks			OUT of total SHGs Exclusive Women SHG s		
		No. of SHGS	No. of members	Saving account	No. of Women	No. of members	Saving Amount
1	Bank of Baroda	152	725	16.00	129	350	2.60
2	Bank of India	139	1398	42.15	31	290	2.20
3	Canara Bank	453	4925	52.25	390	4052	37.59
4	Central Bank of India	482	5296	28.72	350	3844	19.14
5	Indian Bank	114	1710	3.63	114	1710	3.63
6	Punjab & Sind Bank	704	7040	49.76	411	4110	28.57
7	Punjab National Bank	10703	109260	7002.82	8037	84148	4264.17
8	State Bank of India	4984	59808	207.00	4190	50280	170.00

According to this table the relationship between Bank SHGs and Women SHGs is shown. According to above in haryana region 2010-2011 highest SHG savings amount to women in Punjab National Bank is 4264.17 lakh and lowest in Bank of India is 2.20Lakh.

FINDINGS :-

The age group profile of the owners reveals that there are more or less an equal proportion of women starting a business in the various age groups up to 35years. This shows that many women start this business well into their mid ages once they have taken care of their family responsibilities like bringing up of their children to a certain age and also when they find their financial needs rising.

As to the educational background, the average business woman in this segment has a secondary degree (Higher secondary education). In fact, 42% of women entrepreneurs confirmed to have secondary education, whereas 30% had tertiary education (University Degree) and 28 % launched their enterprise with a degree of primary education.

Those with university degree however showed a mismatch to the present profession being done by them. This reveals that many take up UG and PG degrees mostly without a proper goal in life or do not find the right employment and are hence driven to starting a passion for business. Regarding This further shows that unmarried women entrepreneurs are not more prevalent as it needs a lot of support from the family members to give permission to these women.

The situation with regards to availability of help at home is varying as most of these women have the help of their parents / husband to take care of their family when they are at work- as job of a beautician is very demanding and keeps one away from home during the late evening hours and also on holidays. Though about 19% of the respondents have also said that they have to take care of family and work, all by themselves.

As to the choice of entrepreneurship as the main occupation, 47.7% of women entrepreneurs confirmed that they have always worked for themselves, whereas 52.3% have become entrepreneurs after having occupied various jobs.

Around 85% of the respondents said that this was the first enterprise they owned while the remaining had experience in running other small business like garment previous venture and expanded into beauty care while few went out of business in their earlier venture. A majority of the respondents had started their venture solely on the basis of the support rendered by their family members like their husband, father / mother. It is thus seen that the immediate family plays a very important motivator for the women to cherish her dream to establish a business. Financial questions came clearly first with 49.7% of respondents quoting this factor as the most important one, followed by the combination of work and family life with 31.4% and the lack of information and advice with 28.1%.

Nearly one fifth (17.0%) stated that they did not experience any problems when starting their business. It may be worthwhile having a closer look at this category of women to investigate their success paths and the possible relationship between educational levels, cultural background and family situations for example. Yet these kinds of considerations go beyond the scope of the present study, and would need to be looked at in a separate analysis.

The need for economic independency motivating women into entrepreneurship is very much evident from the fact that about 56% of the women meet their household income to the extent of 75 – 100 % while 28% meet 50 –75% of their household income in comparison to the other proportions. It is indeed sad to know that the small industries development institutions have not rendered any support to these women entrepreneurs in starting their enterprises as only 16% have received any such support.

A highly encouraging support of their family members has the foundation of success of these women entrepreneurs standing high in the field of beauty care. It is also worthwhile to mention the support rendered by the society to these women entrepreneurs though much later in their business cycle when they have successfully withered away the storms and have established themselves towards glory.

SUGGESTIONS:-

Women Entrepreneurs should be Encouraged to take loans.

Special financial skills should be developed.

SHGs and Extended financial credit should be provided as They encounter finance problem in starting a business.

Industry ready trainees should be made available for these female entrepreneurs.

Women Entrepreneurs should have a Tie –up with Educational institutions.

Awareness drive should be launched to get their business registered to get the financial incentives.

Establish linkages with Skin Doctors

TREATMENT TRAINING should be provided to these women Entrepreneurs.

CONCLUSION :-

To conclude this empirical study, it can be said Thus the study brings forth the characteristics of a typical female entrepreneur who is mostly educated with secondary education, runs a micro enterprise, has a husband and children and mostly supported by husband / father/mother for help and no other outside help. Mostly women are married. The woman creates her enterprise before the age of 35, after having gained some working experience working for others. The main reason for creating her business is the desire for control and freedom to take own decisions, yet she does not lose the perspective of making money out of sight. She dedicates over 48 hours (typically around 60 hours) to her business on a weekly basis, and has made it thanks to hard work, perseverance, family support and solid self-confidence. The main problems she faced when creating her enterprise were financial

questions and combining work and family.. The main reason for creating her business is the desire for control and freedom to take own decisions, yet she does not lose the perspective of making money out of sight .The women entrepreneur who have already a set-up of beauty services they join that for career and succession planning.

Entrepreneurship is a motivating factor in building capital formation. Female entrepreneurs in this sector very Meager (FEW) Women have taken loan they are not aware of schemes and self help groups. This segment is going organised because of affluent choice for diversification of business.

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ANALYSIS OF CARBURISED MILD STEEL SAMPLE FOR MECHANICAL AND WEAR PROPERTIES

Mr. Ankit Kumar Singh

Research Scholar at Translam Institute of Technology & Management, Meerut, Uttar Pradesh

ABSTRACT

In the present work the wear and mechanical properties of sample mild steel are to be studied that are carburized at with several temp. of 850, 900⁰C and 950 degree Celsius. From the study this is obtained that through application of heat treatment the wear resistance, Tensile Strength and hardness are increased. The objective at here is to examine the result of different carburization temp. on wear and mechanical properties for sample mild steel and which carburizing temperature is more preferable for carburizing of mild steel . To attaining these conditions firstly the sample mild steel has been carburized for different temp. ranges, then tempering is done at 200 degree celsius with the soak time of half hour. Now when the sample is prepared they are subject to different test such as toughness test , hardness and abrasive wear test. The result of experiment performed shows that mild steel which is carburized at a temperature of 950 degree celsius show the best result for different wear and mechanical properties. This is because at this temperature of 950 degree celsius it shows largest wear resistance, Tensile Strength and Hardness, so it must be chosen for required application.

Keywords-Carburization, Hardness, Toughness, Wear Rate, Wear Resistance

INTRODUCTION

The carburization make a change in the upper surface of the specimen by changing its Carbon content with results in the change of it's mechanical and wear properties. The heat treatment process followed by carburization improves the mechanical and wear resistance of the mild carbon steel. Carburization can be simply said to be as the addition of carbon on to the upper surface of low carbon steel with the temperature generally ranging from 850 to 950 ⁰C (1560 - 1740 F) on which austenite ,which has high solubility for carbon , is at the stable crystal structure.

Steels which are used in case hardening normally having the carbon content on around as 0.2% and when the carburization is done, the carburized layer usually have a carbon content between 0.8 to 1%. However the carbon content of the surface is limited 0.9 percent because if the carbon content is high this may occur in withheld brittle Martensite and Austenite.

CARBURIZATION

In the carburization process the sample of mild steel are positioned over dense bed of carburizer which are placed inside stainless steel container & it is entirely sheltered from all borders, steel plate is covered over upper portion of container. The container filled with mild steel samples is now kept in muffle furnace and different carburization temp. are maintained such as 850, 900°C and 950 degree Celsius, the soak time is two hrs. In this way the specimen becomes carburized & further they are quenched inside water that is the hardening process which is applied directly afterwards the carburization. Through the application of carburization procedure the mech. & wear property of the samples (M.S) gets amplified. The obtained carburized steel is now tempered for a particular temp. and time & after that different processes are applied for several type of mech. & wear testing.

It is the generally applied Surface Hardening method. Carburizing can be simply said to be as adding carbon on the upper surface of L.C.S with temperature ranging from 850 degree Celsius to 950 °C. Approximately of around 0.03 mm depth carbon is applied on to the exterior portion of steels. This process improves the wear resistance and mechanical properties without affecting the tougher interiors and softer part.



Fig 1: Carburization of Mild steel specimen in muffle furnace

TESTS PERFORMED

1. Abrasive wear test: abrasive wear test is performed in pin on disc machine
2. Hardness test: hardness test is performed in Rockwell hardness tester
3. Toughness test: This test is performed with the help of Charpy impact test machine
4. Tensile test: This is performed with Instron 1195 tensile test machine

RESULT AND DISCUSSION

Different kind of carburized & tempered Mild steel samples are prepared over several temp. conditions and after that these samples are checked for various tests like toughness, hardness, A.W test & tensile strength test. Table 1 to 3 gives the record of results of

abrasive wear test as established for several weights. Table gives the record of Rockwell hardness test at a load of 150 kg, tensile strength test and toughness test.

Table 1. At load 14.7N, Result for A.W test of carburized M.S

Carburization Situation		Tempering State		Weight loss (g)	Wear Volume ($\text{Cm}^3 \times 10^{-2}$)	Wear Rate ($\text{Cm}^2 \times 10^{-7}$)	Wear Resistance
Temp ($^{\circ}\text{C}$)	Soak time (Hrs)	Temp ($^{\circ}\text{C}$)	Soak time (Hrs)				
At 950 $^{\circ}\text{C}$	2	200 $^{\circ}\text{C}$	0.5	0.108	1.35	2.03	0.492
At 950 $^{\circ}\text{C}$	2	200 $^{\circ}\text{C}$	0.5	0.117	1.48	2.19	0.454
At 850 $^{\circ}\text{C}$	2	200 $^{\circ}\text{C}$	0.5	0.134	1.65	2.47	0.402
Plain M. S	-	-	-	0.211	2.65	3.90	0.254

Table 2. At load 29.4N, Result for A.W test of carburized M.S

Carburization Situation		Tempering State		Weight loss (g)	Wear Volume ($\text{Cm}^3 \times 10^{-2}$)	Wear Rate ($\text{Cm}^2 \times 10^{-7}$)	Wear Resistance
Temp ($^{\circ}\text{C}$)	Soak time (Hrs)	Temp ($^{\circ}\text{C}$)	Soak time (Hrs)				
At 950 $^{\circ}\text{C}$	2	200 $^{\circ}\text{C}$	0.5	0.124	1.57	2.32	0.425
At 950 $^{\circ}\text{C}$	2	200 $^{\circ}\text{C}$	0.5	0.135	1.73	2.54	0.388
At 850 $^{\circ}\text{C}$	2	200 $^{\circ}\text{C}$	0.5	0.155	2.00	2.92	0.321
Plain M. S	-	-	-	0.250	3.19	4.69	0.211

Table 3. At load 49N, Result for A.W test of carburized M.S

Carburization Situation		Tempering State		Weight loss (g)	Wear Volume ($\text{Cm}^3 \times 10^{-2}$)	Wear Rate ($\text{Cm}^2 \times 10^{-7}$)	Wear Resistance
Temp ($^{\circ}\text{C}$)	Soak time (Hrs)	Temp ($^{\circ}\text{C}$)	Soak time (Hrs)				
At 950 $^{\circ}\text{C}$	2	200 $^{\circ}\text{C}$	0.5	0.149	1.93	2.79	0.353
At 950 $^{\circ}\text{C}$	2	200 $^{\circ}\text{C}$	0.5	0.163	2.11	3.11	0.318
At 850 $^{\circ}\text{C}$	2	200 $^{\circ}\text{C}$	0.5	0.191	2.39	3.52	0.279
Plain M. S	-	-	-	0.303	3.89	5.72	0.176

Result of abrasive wear test:

Table. 1 to 3 gives result for abrasion wear test carried out for M.S sample that are carburized at several temp. as 800, 900 $^{\circ}\text{C}$ & 950 degree Celsius.. The following results can be drawn from the A.W test perform for samples :

- For an un carburized mild steel sample the weight loss due to abrasion is highest and it is lowest for the carburized mild steel at 950 degree Celsius.
- The abrasive test which is done for different loads of 49 N, 29.4 N and 14.7 N and the result found is that the weight loss during abrasion is lowest at the load of 14.7

Newton and highest for the load 49 Newton so we can say that on the increment of load the weight loss due to abrasion also increases. This is also shown graphically on figure 1.

9. The weight loss of carburized mild steel during abrasion is highest for the temperature 850⁰C and is lowest at temperature 950⁰C. There is low carbon content at lower carburization temperature. Hence the result drawn is that the weight loss due to abrasion decreases with increase in the carburization temp..
10. The wear rate of a material depends on the load applied. The abrasive test result says that the wear rate increases with increase in the load applied. Hence we can say that the wear is maximum for the load of 49 Newton and it is smallest for the load of 14.7 Newton.
11. For the un carburized mild steel the Wear rate is highest and is smallest for the mild steel which is carburized at the temperature of 950⁰C. On increase in the carburization temperature the wear rate decreases. This is also proved graphically through fig 3.
12. For an un carburized mild steel the wear resistance is lowest and for the mild steel which is carburized at the temp. of 950⁰C the wear resistance it is highest. On studying the case of mild Steels the wear resistance is highest for or the sample which is carburized at temp. of 950⁰C and is smallest for the sample which is carburized at temp. of 850⁰C. Hence the result found is that the wear resistance is directly proportional to carburization temperature. Shown graphically through fig 2.
13. The final result achieved is that the mild steel which is carburized at temperature of 950⁰C gives the best result as it shows the highest wear resistance ,less weight loss and less wear rate due to abrasion.

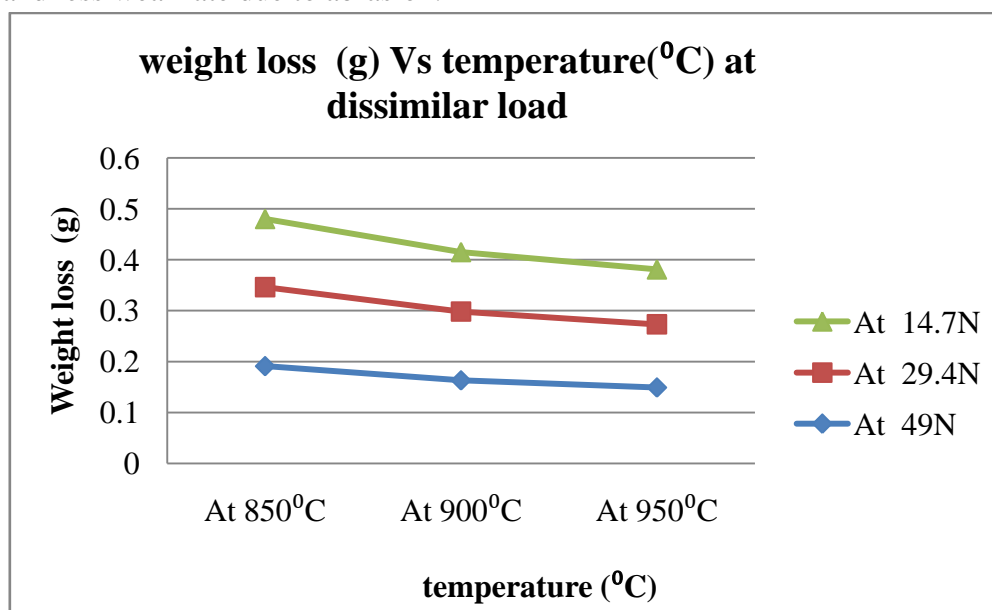


Figure 2 :Comparison of loss of weight because of abrasion Vs temperature for 3 dissimilar load as 49N,29.4N and 14.7N

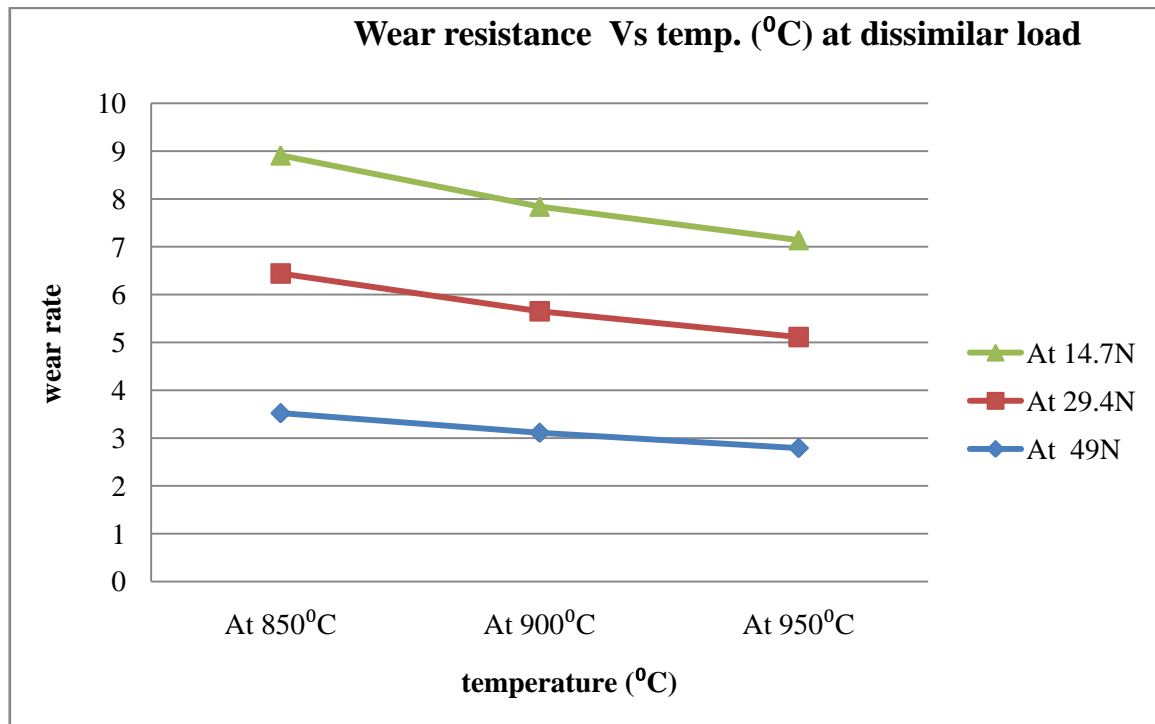


Figure 3 :Comparison with Wear rate and temp. at different load

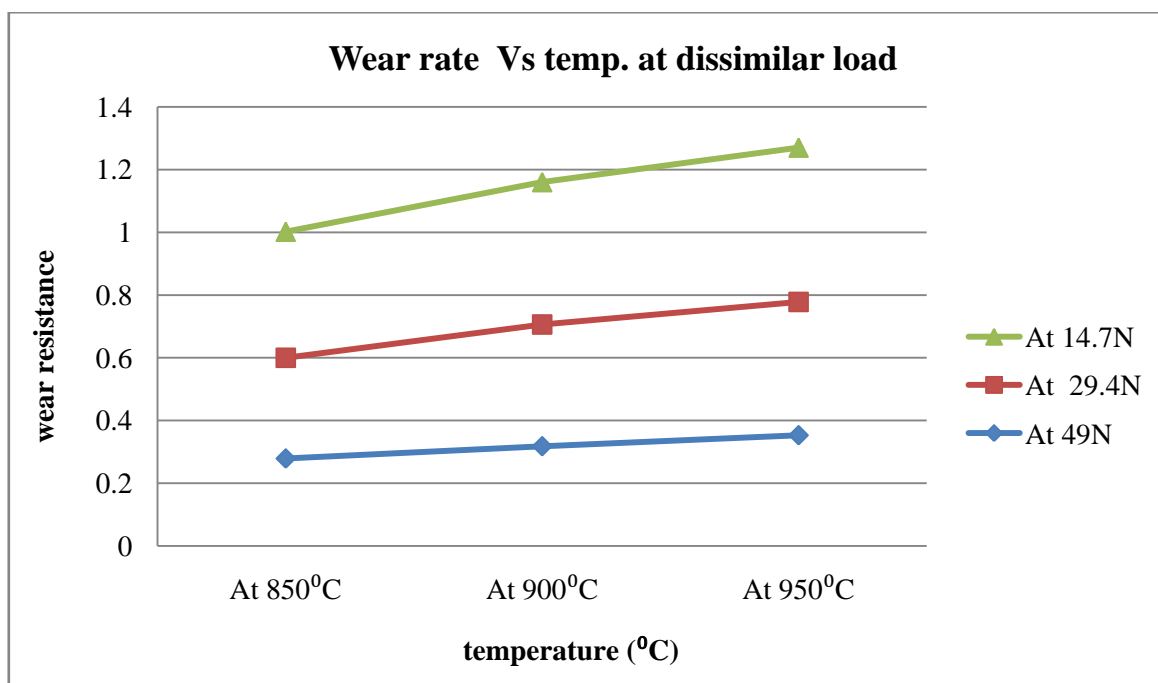


Figure 4:comparison of Wear rate and temp. at dissimilar load

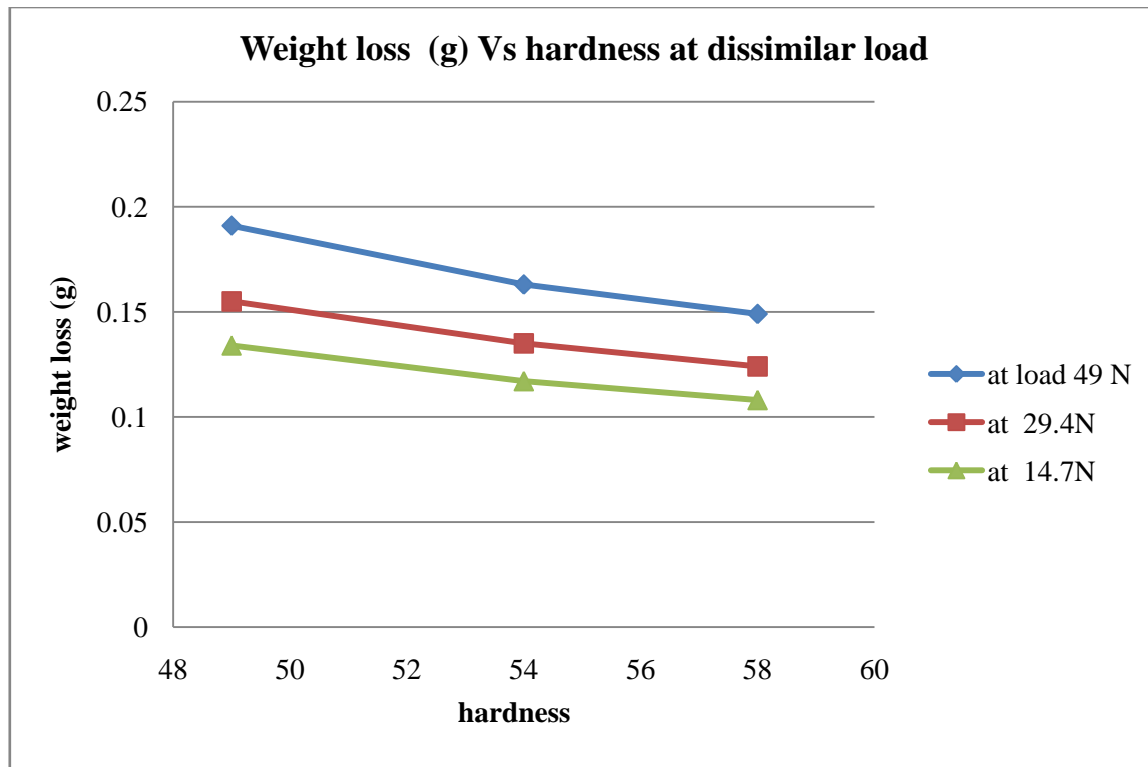


Figure 5 :comparison for Weight loss and hardness at different loads

Table 4 :Result for rockwellhardness,tesile and toughness test at dissimilar temperature

Carburization Situation		Tempering State		Tensile strength (mpa)	Hardness (R _e)	Toughness Joule (Nm)
Temp (°C)	Soak time (Hrs)	Temp (°C)	Soak time (Hrs)			
At 950 ⁰ C	2	200 ⁰ C	0.5	1962	58	31
At 950 ⁰ C	2	200 ⁰ C	0.5	1923	54	34
At 850 ⁰ C	2	200 ⁰ C	0.5	1873	50	36
Plain M. S	-	-	-	439		53

Result of mechanical properties (toughness, tension strength and hardness test results):-

The summarised form of the result is given in following points:

- Tensile Strength ranges from 439 MPa to 1962 MPa as shown in table 4 . Tensile Strength is smallest for un-carburized Mild steel (M.S) and largest for the M.S which is carburized at a temp. of 950 degree celsius. Hence carburization improve the Tensile Strength of a metal.

- On considering the case of carburized samples only, we can say that Tensile Strength is largest for sample which is carburized at a temp. of 950 degree Celsius and is smaller for sample carburized at a temp. of 850 degree Celsius. The Tensile strength of a material increases by rise in carburized temp..
- Toughness test result it is obtained that toughness is ranging from 53J to 31 J and it is smaller for carburized M.S sample and is largest for un carburized M.S. Hence we can say that toughness decreases with the application of carburization process on mild steel.
- Toughness test results say that on increase in the values of carburization temp. there is a small decrease in toughness readings. Hence we can say that the toughness decreases with an increment in carburization temperature.
- Hardness readings range from 50Rc to 58Rc and it shows the highest reading for sample which is carburized at temp. of 950 degree Celsius and this is smaller for sample carburized at 850 degree Celsius. Hence we can say that reading of hardness increases with the upsurge in carburization temp..
- Sample which is carburized at a temp. of 950 degree Celsius shows the top outcomes for wear and mech. Properties.

Carburization temp effect on weight loss of sample which is carburized

Table 1 to 3 shows the relationship b/w weight loss due to abrasion and carburization temp.. From the table it is known that through the increment in carburized temp. the weight loss decreases. From this we can say that it is smallest for carburization temp. of 950 degree Celsius and it is largest for sample carburized at a temperature of 850 degree Celsius. So, with the increase in temperature the hardness of material increases and as the hardness increases the weight loss of material due to abrasion decreases.

Action of load on Weight loss of carburized samples.

Three dissimilar loads (i.e 49 N, 29.4N & 14.7 N) are taken for Abrasive wear test and the result of these has been written in Table. 1 to 3 and we got the output that at a load of 49N the weight loss because of abrasion is largest and at 14.7 N the weight loss is minimum. Hence on studying the result we can say that weight loss because of abrasion increases when load applied is increased this is all due to the fact that force is increased, the friction also increases which results in the increment of weight loss.

Carburizing temp. impact on Wear rate of carburized M.S sample:-

Carburizing temp. impact on W.R of carburized mild steel sample is given in table 1 to 3. From these tables we can say that carburization temp is directly varied with the wear resistance which means when carburization temp is increased, the wear resistance is also increased. It is maximum for 950^o C and minimum for 850^o C. Hence we can say that 950^o gives the best result toward wear resistance and hence chosen.

Hardness effect on Weight loss of carburize samples.

We find that hardness plays an important role in weight loss because of abrasion & these both have inverse relationship with each other means when the hardness is increased the weight loss is decreased. This is result of the fact that harder materials have larger abrasive wear resistance.

Carburizing temp.effect on Tensile strength of carburize samples :

Table 4 shows the carburization temp.effect on tensile strength of carburize sample. The observed result show that carburization procedure increases the tensile strength of sample M.S. these both have direct relationship with each other which means that the tensile strength increases with upsurge in the carburization temp and when all the three temperatures are compared then we can say that the sample of 950 degree Celsius is showing the the top results and it must be opted.

Carburization temp.effect on toughnes for carburized sample

Mild steel toughness property are greatly affected by the carburization process. Table 4 gives the result of toughness for carburized and un carburized sample. By observing the table we can say that with the increase in carburization temp., the toughness of a material decrease. Hence the carburization process decreases the toughness of sample M.S. By studying it is clear that toughness of carburized simple mild steel decreases with an increase in carbonization temp.

CONCLUSION

From the present work on "Analysis of carburized mild steel sample for mechanical and their properties" the following conclusions can be obtained:

- Wear & Mechanical property of specimen (M.S) are strongly altered by the carburization process.
- Quenching, done after carburization treatment increase W.R, hardness, tensile strength of mild Steel.
- Carburizing decrease the toughness of specimen. Toughness tends to decrease with the increase in carburization temp..
- With the increment in load, the loss of wt. Due to abrasion, W.V and W.R also rises.
- With rise in carburizing temp., the loss of wt. due to abrasion, W.R and toughness declines.
- With rise in carburizing temp., there is an growth in hardness, tensile strength and wear resistance.
- Wear resistance rises with rise of hardness. However there is decrement in W.L because of abrasion and W.R.

- On considering the dissimilar temperatures, the M.S carburize at 950 degree Celsius shows the topmost quality combination of higher hardness , high wear rate and high tensile strength with less wear rate & less weight loss.
- As a final point the result obtained is that the M.S specimen which is carburize at dissimilar temp. Range of 850 , 900⁰C and 950 degree celcius , among all these 950⁰ C give the better result for or wear and Mechanical properties.

SCOPE FOR FUTURE WORK

On considering wear properties and Mech. property of Steel specimen for different temp.of 850, 900⁰C and 950 degree celcius. The subsequent suggestions can be considered:

- Wears as Abrasive wear , Erosive wear and Corrosive wear also these type of studies can be done.
- Identical study can also be done for other Mech. Property as ductility, brittleness compressivestrenth, plasticity ,elasticity& malleability.
- Identical study can also be done through altering the Carburization temp.
- Identical study can also be done through altering tempering temperature and soaking period.
- Identical study can also be done through altering quenching temp..
- Identical study can also be done for heat treated medium carbon steel.
- Identical study can also be done for procedure as cyaniding ,nitridingcarbo-nitriding etc.

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AN ANALYTICAL STUDY OF ORGANISATIONAL LIFE CYCLE AND FACULTY PERFORMANCE IN HIGHER EDUCATIONAL INSTITUTE

**Anushi Singh, Assistant Professor
TMIMT, TMU**

Dr. Ajay K. Garg, Associate Director & Associate Professor

Fairleigh Dickinson University, Vancouver, Canada

Abstract

In the world of business and management, the practice of learning is deemed important for Institution to survive or stay competitive. According to organizational life cycle (OLC) theory, during the Institution's growth from inception, to high-growth, to maturity, Institution characteristics differ and the internal resources and capabilities of the Organisation develop. The faculty performance in such an institution has been discussed by a number of scholars. However, few of them have empirically addressed the issue in educational context. The purpose of this paper is to contribute to the limited previous research on relationship between organisational life cycle & faculty performance in higher educational Institute, by examining the impact of faculty participation on the performance of a private university in Moradabad. The literature has discussed the dynamics of organizational life cycle, but little is known about how it possibly relates to Institution learning. The study findings indicated that faculty performance is positively influenced by employee participation in decision-making and significantly associates with academic results of the university. Additionally, employee participation is also positively associated with the academic results of the university.

Keyword: higher education, public university, Organizational development, Organizational life cycle

INTRODUCTION

The organizational life cycle theory has many appealing aspects as it uses metaphors generally used for living organisms to explain the sequential stages of firm growth and development. These stages present unique sets of effectiveness and difficulties that companies face throughout their life cycles. The description of these stages vary across different literatures however, a common assumption is that they experience transitions often initiated by crisis in the course of 'improvement'. Nevertheless, fast growing small-medium sized ventures are no exceptions to these crises. Despite their successes in achieving high growth, if they do not adjust for constraints, they cannot sustain the growth rate that will eventually lead them to a downfall. Thus identifying the current life cycle stage of an organization is crucial for both the management and future plans. It is important that they recognize their competencies as well as constrains to overcome the growing pains in the future.

In reality, higher education institutions have long been regarded as centres of knowledge creation and application for the larger society, but not only as learning organizations developing and transferring knowledge for the improvement of their own basic processes. In

their competitive environment throughout the world, universities should be given the incentives to become active learning organizations or promote learning activities at organizational level to enhance the quality of teaching and doing research and getting sustainably developed.

Thus, the aim of this research is to analyse the faculty Performance in higher education institutions and clarify its antecedents and consequences. First, we consider faculty Performance as a process to analyse how the organizations promote learning. We then propose and test several hypotheses about its' role as the mediator of faculty participation in decision-making and academic results using data collected from 100 employees in a public university in Moradabad. Finally, our findings and the implications for further study are discussed.

BACK GROUND AND THEORETICAL PART OF FRAMEWORK

A. The Organizational Life Cycle Stages

- a. **The Birth:** The initial stage, called Birth, the company is trying to be possible. The main feature of young companies that are managed by their owners and structure are simple and informal. At this stage, scattered thoughts formed and the need for high levels of creativity. If during this period obligation and the practice is not and is not responsible organization, not be moved. In this step the company, the level of product innovation, remarkable service, limited market scope, informal organizational structure, the use of certain raw information in decision-making and the solutions are simple decisions.
- b. **Growth Stage-** Growth stage, expected the company to establish its sector and in the production of differentiated skills to be successful. If the idea of the creation and growth of the organization, then optionally determine criteria at the stage of rapid growth, the system provides a chance to grow new ideas and creativity to develop, means the rapid growth of strong investment.
- c. **Maturity** - Maturity by maintaining the level of sales, decreased level of innovation and making more administrative organizational structure is determined. At this point, the goals are homogeneous and efficient. New professional managers with the aim of creating and arming the organization to new systems, the quality of attention to the organization to reach maturity. At this stage, the level of innovation is low, decentralized ownership and shareholder dividends worth more to consider
- d. **Reduction Stage-** The rebirth of the elaborate stage structure at this stage, the product and the market are varied and extended company structure part to accommodate more complex and more homogeneous markets in the fall. The emphasis is more complex control and planning systems. Innovation is a very system it is possible to obtain the markets or new products to seize young companies do. At this stage, the presence of executive power in the organization is essential that the organization is able to birth ideas to implement.
- e. **The Decline-** In the final stage or dissolution, the market is stagnant and inactive, external challenges and a lack of earnings due to reduced innovation, and lead to the demise of the company. it the initial stage of aristocracy and bureaucracy with the weakening of the executive power, negative bureaucratic organization with a full and complete bureaucracy, only to follow the administrative system, is created and the system has become much subsystems and maximum distance from the environment arises.

B) faculty Performance in higher educational institute

This study provides important contributions. Unlike most prior studies investigating the research/teaching relationship, it explicitly considers the role of a performance evaluation system in providing incentives and motivations for academics. It challenges the conventional wisdom that research activity facilitates teaching effectiveness with a finding that only high-quality research enhances teaching quality. The performance measurements may be detrimental to quality teaching are discounted based on the finding that high-quality research is actually congruent with quality teaching. Following the introduction, contemporary performance evaluation trends in academia are outlined.

Objective of study

1. To study the Parameters which are affecting the organizational life cycle in higher education.
2. To analyze the Parameters which are affecting faculty performance in higher education

Hypotheses

H0: There is significant result are affecting the organizational life cycle in higher education.

H1: There is significant results are affecting the faculty performance in higher education.

Research Methodology

The researchers have attempted to try to approve this conviction. Hence, the principle of this research was to find the descriptive study between organization life cycle and Faculty Performance practices of the higher education in public university of the region Moradabad city.

The subject is chosen after thorough exercise of perusing different Journals, Online Articles and News, reaction from employees working in institute.

Design/methodology/approach –The research was designed out with the help of Questionnaire for Employees working in private university and higher education institute in Moradabad city.

The sample size of respondents for data collection was 100 from different OLC of the age group 25-60 years. The technique used for carrying out the research was mean score by likert scale.

Primary- The data was collected from the faculties working in private universities and Higher Education Institute in Moradabad city by a pre-designed Questionnaire.

Secondary – The data was collected from Journals, Articles and online sources.

Data Collection

The primary data was collected from the faculties working in private universities and Higher Education Institute in Moradabad city by a pre-designed Questionnaire.

The secondary data was collected from Journals, Articles and online sources. The sample for the current study demonstrates the following respondents under study. We chose Organisational Life Cycle parameters variable & faculty performance variable.

Table A) Parameters measured variable model of organizational life cycle

Sr. No.	Parameter affecting OLC of Higher Education	Total respondents	Strongly agree	Agree	Neutral	Strongly disagree	Disagree
1.	Continuous learning	97	48	22	10	8	9
2.	Research activities	95	28	15	8	40	4
3.	Student development targets	93	52	18	4	9	10
4.	Curriculum planning	92	50	20	3	9	10
5.	Innovation activities	98	52	22	10	9	5
6.	Collaboration & Self Protection	85	32	22	5	18	8

Table: 1(B) Average Agreement at Each Level Regarding Organisational Life Cycle

Sr. No.	Parameter affecting OLC of Higher Education	Total respondents	Rank
1.	Continuous learning	97	2.05
2.	Research activities	95	2.75
3.	Student development targets	93	2.00
4.	Curriculum planning	92	2.01
5.	Innovation activities	98	1.90
6.	Collaboration & Self Protection	85	2.38

It is clearly mentioned from the Table 1(A) and Table 1 (B) that the most noteworthy factor ensures research activity. It suggests that Suitable research activities are necessary for organisation growth and faculty development. From the table researcher get the highest rank estimated as 2.75 on the liker scale which implies that the respondents. Thus with different variables like Innovation activities likewise getting lowest rank 1.90 dimension of Weakness of Organisation This suggests that if organisation are able to organisation life cycle easily they are happy to work in present organizations.

The sample for the current study demonstrated the following respondents under academic study. We chose faculty performance in higher education as an independent Variable

Table: 2(A) Percentage of involvement in teaching activities

Sr. No.	Parameter affecting in faculty performance	Total respondents	Strongly agree	Agree	Neutral	Strongly disagree	Disagree
1.	Updating courses	85	35	22	16	10	2
2.	Increasing my knowledge base	94	48	25	8	10	3
3.	Planning course instruction	86	22	38	20	3	3
4.	Creating syllabi for courses	80	28	25	21	2	4
5.	Assessment & feedback to students	90	30	20	10	20	10
6.	Interaction with students	91	28	45	10	8	9
7.	Professional development	93	44	27	8	11	3
8.	Providing student opportunities	86	22	38	20	3	3
9.	Assisting with student research	88	38	24	20	2	4
10.	Comprehensive exams	92	46	25	8	10	3
11.	Department activities	90	38	25	21	4	2
12.	Organising workshops	89	25	32	20	2	10
13.	New course development	88	38	24	20	2	4
14.	Teach new course preparation	83	30	42	6	4	1

Table: 2 (B) Average Agreements at Each Level Regarding Faculty Performance

Sr. No.	Parameter affecting in faculty performance	Total respondents	Rank
1.	Updating courses	85	2.08
2.	Increasing my knowledge base	94	1.88
3.	Planning course instruction	86	2.15
4.	Creating syllabi for courses	80	2.11
5.	Assessment & feedback to students	90	2.56
6.	Interaction with students	91	2.47
7.	Professional development	93	1.94

8.	Providing student opportunities	86	2.15
9.	Assisting with student research	88	1.97
10.	Comprehensive exams	92	1.90
11.	Department activities	90	1.96
12.	Organising workshops	89	2.32
13.	New course development	88	1.97
14.	Teach new course preparation	83	1.84

It is clearly mentioned from the Table 2(C) and Table2 (D) that as with teaching, activities and pursuits related to research are numerous. Tenured and tenure-track professors were asked to indicate whether they had engaged in various research activities as described; and, whether they had produced any research products typically measured as a sign of productivity. Research activities most frequently reported by faculty included engaging in scholarly professional development activities in Assessment & feedback to students getting highest rank 2.56 by the help of Likert scale. Thus with different variables like Teach new course preparation likewise getting lowest rank 1.84 dimension of Weakness of Faculty Performance. This suggests that if organisation are able to work on these factors that can be easily faculty are happy to work in present organizations.

Conclusion

The organizational life cycle process in higher educational universities has been explored and the influencing factors and its' consequences were described. Those results help understanding more about OLC theory in the higher education settings. Further researches could address weaknesses seen in this paper to study more on organizational life cycle and faculty performance in larger context of private universities in Moradabad, empirically testing its relationship with other antecedents and consequences. Additional studies might explore variations in workload among disciplines as suggested and across differing types of higher institute. It seems imperative that as institutions are reshaped to meet the challenges of greatly reduced state funding that their faculties be at the centre of those processes of change. In what world does it make sense that expertise inherent in highly trained faculty of such universities is excluded from decision making processes in favour of state legislators and political players who, no matter how well intentioned, are basing their proposals on a set of assumptions that are greatly flawed, and who have little understanding of the consequences to students' education likely to be unleashed by ill-founded reforms.

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ECONOMIC ANALYSIS OF THE PERFORMANCE OF MGNREGA IN SHAHABAD BLOCK, ANANTNAG DISTRICT, JAMMU AND KASHMIR

MUHSIN MUKHTAR GANIE*

Abstract

The MGNREGA Act gives legal guarantee of at least 100 days of wage employment in a financial year to the rural households, whose adult members volunteer to do unskilled and manual work. All the rural households who are willing to take up unskilled labour are required to register with their respective village council (called Gram Panchayats) and are issued with a Job card. After receiving the job card, a household can demand work anytime and will be provided employment within 15 days of expressing demand, else will be compensated with a daily unemployment allowance (Government of India 2008).

Objectives: 1. To study the socio- economic condition of the sample respondents. 2. To assess the activities of the scheme in terms of income generation in the study area. 3. To analyze the days of work and income generated under the MGNREGA sample respondents.

Methodology: Simple Random Sampling method was adopted to select the Sample of 90 respondents. **Conclusion:** The government provides 100 days of guarantee employment to a family during the financial year. The overall performance in getting the employment opportunities differ significantly, it could be seen under the three class intervals below-50, 51-75 and 76-100 days of employment. It was found that majority of the respondents 48 participated in the road maintenance activities. It was found that on an average, respondents worked 75 days of employment in one year (2012-13). It was found that the respondents on an average earned the wage income of Rs 9760 in one year.

Key Words: MGNREGA, Irrigation, Cropping Patterns, Crop Yields, Wages, Employment Women's Participation, Agricultural labour

*Ph.D Research Scholar, Department of Economics, Bhagwant University, Ajmer Rajasthan

INTRODUCTION

India has more than three decades of experience in implementing different Employment Generation Programmes. These Programmes have their origin during the Great Depression days when western countries used these as counter cyclical policy instruments. Several countries of the developing world have also used Public Work Programmes to deal with droughts and famines. Over time these schemes have evolved into employment creation and Poverty alleviation Programmes. These Programmes have been used and advocated for alleviating both chronic and transient poverty in the South Asian context for a long time (Hirway, Saluja and Yadav, 2010).

The Act gives legal guarantee of at least 100 days of wage employment in a financial year to a rural house hold, whose adult members volunteer to do unskilled and manual work. All the rural households who are willing to take up unskilled labour are required to register with their respective village council (called Gram Panchayats) and are issued with a Job card. After receiving the job card, a household can demand work anytime and will be provided employment within 15 days of expressing demand, else will be compensated with a daily unemployment allowance (Government of India 2008). In some cases, rural households belonging to backward castes are allowed to perform work on their own fields. More importantly, the Act aims at eradication of extreme poverty and at making villages self-sustaining through productive asset creation (such as water tanks and soil conservation works). This is meant to regenerate the rural natural resource base, which in turn will result in sustainable livelihoods for residents. The scheme has been implemented in a phased manner. It was launched in two hundred selected districts on 2nd February 2006 in Phase I and was extended to 130 more districts in 2007-08 in Phase II. It was further extended to the remaining 285 districts from 1st April 2008 onwards, in Phase III. The government has referred to it as an “Act of the people, by the people, and for the people.

Before MGNREGA, time to time, different wage employment programmes were introduced in the country. The MGNREGA ranks first among the most powerful initiatives ever undertaken for transformation of rural livelihoods in India (Ghosh, 2011). MGNREGA has come after almost 56 years of experience of other rural employment programmes, which include both Centrally Sponsored Schemes and those launched by State Govt. These comprise the National Rural Employment Programme (NREP) 1980-89; Rural Landless Employment Guarantee Programme (RLEGP) 1983-89; Jawahar Rojgar Yojana (JRY) 1989-1990; Employment Assurance Scheme (EAS) 1993-99; Jawahar Gram Samridhi Yojana (JGSY) 1999-2002; Sampoorna Grameen Rojgar Yojana (SGRY) from 2001; National Food For Work Programme (NFFWP) from 2004 were National Rural Employment Schemes. Among these, the SGRY and NFFWP have been merged with NREGA in 2005. In many ways the MGNREGA is a replication of earlier schemes with a legal guarantee. The most critical difference now is that people's entitlement, by law, the employment is mandated through MGNREGA. While other programmes are allocation-based, MGNREGA is demand-driven (Dreze).

The state of Jammu and Kashmir is the prominent state in the Indian union. The state comprises three divisions namely, Jammu, Kashmir and Ladakh and for administrative purposes, It has been demarcated into two divisions, i.e, Kashmir and Jammu spread over 12 and 10 districts respectively. There are 121 Community Development Blocks, 2661

Panchayats & 6652 villages. In Jammu and Kashmir the implementation of Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) has been done in various phases. In the first phase, three districts, viz. Poonch, Doda and Kupwara were brought within the ambit of this Scheme which has been extended to the districts of Anantnag and Jammu during phase second. The programme was extended to all the remaining districts by April, 2008. As envisaged in the Act, the Scheme is being implemented on a cost sharing basis between the Centre and the State in the ratio of 90:10. In District Pulwama MGNREGA has been implemented in third phase that is, 7th April 2008 in the year and has been extended to the various blocks in the same year.

REVIEW OF LITERATURE

Chhaya Datar (2007) has explained and compared the two schemes of MEGS and NREGA. The study portrays why the rural employment guarantee scheme failed in Maharashtra in 1976. The study has pointed out various irregularities in the execution of the scheme. The Sarpanch and Gram Sevaks receive a large sum of money to develop village assets. But they resist strongly because of the increased burden and the lack of kickbacks through the contractor. The organizations in Maharashtra have been moulded in old time politics of demanding and protesting against the state but are not used to the politics of participation of the people to override the state.

Dreze (2007) looks at the corruption in rural employment programs in Orissa and how this has continued in a NREGS as well. However, he believes that there is tremendous potential of NREGA in the survey areas. Where work was available, it was generally found that workers earned close to (and sometimes more than) the statutory minimum wage of Rs 70 per day, and that wages were paid within 15 days or so. This is an unprecedented opportunity for the rural poor, and there was evident appreciation of it among casual labourers and other disadvantaged sections of the population. There is the hope among workers that NREGA would enable them to avoid long-distance seasonal migration. Further, there is plenty of scope for productive NREGA works in this area, whether it is in the field of water conservation, rural connectivity, regeneration of forest land, or improvement of private agricultural land.

Krishna Murty (2006) has dealt with the employment guarantee programme from the perspective of responding to sudden (and rapid) onset of events like economic crises, natural and man-made. The impact of such local disasters/crisis is large. Hence, the author addressed the disaster management strategies in India. This platform of NREGS could be used for mitigating the impact of disasters. The National Rural Employment Guarantee Scheme must have the built-in elasticity and capacity to respond to disasters and crisis, particularly those of a localized nature, by expanding wage employment opportunities with minimum loss of time and aiding the recovery of the affected local economy.

Vidhiya Das and Pramod Pradhan (2007) have explored the execution in NREGA and process in empowering and offering benefits to tribal people. The author has appreciated the government for taking several progressive steps. Further they devised not to sit aback and count its laurels. The government of Orissa must rise to the occasion and take immediate step to stop this most hypothetical and cruel joke on its poorest and most vulnerable communities

Vinayak Reddy (2007) has adopted descriptive research design and used the available literature related to Rural Employment Guarantee Scheme in the state of Orissa. The author

has observed that in a country where we have no unemployment insurance and social security, there is no better alternative than the public works programmes for many unorganized sectors. NREGA has emerged as biggest social security programme for the unorganised workers. These efforts require reorientation of the several institutions and policies and adoption of new strategies to achieve the objectives of national rural employment guarantee programme more effectively for inclusive growth as emphasized in the eleventh plan document.

OBJECTIVES

1. To study the socio-economic condition of the sample respondents in the study area.
2. To assess the activities of the scheme in terms of income generation in the study area.
3. To analyze the days of work and income generated under the MGNREGA sample respondents.

METHODOLOGY

In order to study the Economic Analysis of the Performance of MGNREGA, Shahabad block was selected from Anantnag district of the Jammu and Kashmir. The data was collected from two villages of Shahabad block namely Hardu Shichan (village V1) and Qamar (village V2). Simple Random Sampling method was adopted to select the Sample of 90 respondents. A sample of 45 respondents was selected from the two selected villages and a total sample of 90 respondents was selected for the present study.

ANALYSIS AND DISCUSSIONS

Table -1
Education-Wise Classification of the Respondents

S. No	Education	Villages		Total
		V1	V2	
1.	Illiterate	4 (8.9)	3 (6.7)	7 (7.8)
2.	Primary Education	9 (20)	1 (2.2)	10 (11.1)
3.	Middle Education	7 (15.5)	6 (13.3)	13 (14.5)
4.	Secondary Education	13 (28.9)	18 (40)	31 (34.4)
5.	Higher Secondary Education	9 (20)	9 (20)	18 (20)
6.	Collegiate Education	3 (6.7)	8 (17.8)	11 (12.2)
Total		45 (100)	45 (100)	90 (100)

Source: Computed from primary data

Note: Figures in the parentheses denotes percentages to the column total

Table-1 shows the education wise classification of the respondents. Out of the 90 respondents, 10 respondents had completed their primary education followed by 13 respondents who had completed their middle education. 31 respondents had completed their secondary education and 18 respondents had completed their higher secondary education in the study area. 11 respondents were graduates. Only few respondents were illiterate.

Table-2
Sex-Wise Classification of the Sample Respondents

S. No	Sex	Villages		Total
		V1	V2	
1.	Male	38 (84.4)	35 (88.9)	73 (86.7)
2.	Female	7 (15.6)	10 (11.1)	17 (13.3)
Total		45 (100)	45 (100)	90 (100)

Source: Computed from primary data

Note: Figures in the parentheses denotes percentages to the column total

Table-2 shows the gender wise classification of sample respondents in the study area. Out of the 90 sample respondents, majority of respondents is 73 which belong to male category, in this total 38 respondents are in V1 and 35 respondents are in V2. 17 respondents are females, in ^{this} total, 7 respondents are in V1 and 10 respondents are in V2.

Table-3
Age-Wise Classification of the Respondents

S. No	Age	Villages		Total
		V1	V2	
1.	18-30 years	7 (15.6)	11 (24.5)	18 (20)
2.	31-45 years	21 (46.7)	17 (37.8)	38 (42.2)
3.	46-60 years	10 (22.2)	11 (24.4)	21 (23.3)
4.	Above-61years	7 (15.5)	6 (13.3)	13 (14.5)
Total		45 (100)	45 (100)	90 (100)

Source: Computed from primary data

Note: Figures in the parentheses denotes percentages to the column total

Age determines the active participation of the community in promoting their economic and education position. Table-3 shows that out of 90 samples respondents, majority of respondents 38 were between 31-41 age-group, in this total, 21 respondents are in V1 and 17 respondents are in V2. 21 respondents were between the 46-60 age group, in this total, 10 are in V1 and 11 are in V2. 18 respondents were between 18-30 age group, in this total, 7 respondents were in V1 and 11 in V2. 13 respondents were above 61years, in this total 7 respondents were in V1 and 6 respondents in V2.

Table-4 Average Annual Household Income

S. No	Income	Villages		Total
		V1	V2	
1.	Agriculture	161100 (36.8)	282600 (52.9)	221900 (45.6)
2.	Agricultural Labor	58800 (13.4)	76400 (14.3)	67600 (14)
3.	Daily Wages	83600 (19.1)	101600 (19.0)	92600 (19.1)
4.	Business	46200 (10.5)	36800 (6.9)	41500 (8.5)
5.	Private Employment	3200 (0.7)	4000 (0.7)	3600 (0.7)
6.	Government Employment	85300 (19.5)	32500 (6.1)	58900 (12.1)
Total		438200 (100)	174900 (100)	486100 (100)

Source: Computed from primary data

Note: Figures in the parentheses denotes percentages to the column total

Household income is one of the proxy indicators in assessing the levels of development of the households. Table-4 portrays the sources of household's income of the sample respondents. The sources of household annual income come from six sources of the study area. On an average, per household income is Rs 486100. Where the highest source of income comes from agriculture (45.6%). Daily wage stands as a second source of income (19.1%). contributes more towards other sources. Income from agricultural labour is (14%) to the total income. They are involved in agricultural operations, such as sowing of seeds, transplantation, weeding out, manuring, harvesting etc. A few of them involve themselves in tailoring, running shops, embroidery, shawl making, poultry farms and fish farms which come under business. Income from government employment is (12.1%). Income from business is (8.5%). The income from private employment is (0.7%). Private employment includes textile labourers. Mainly they work in the manufacturing of inner garments industries, hotels and small scale industries, private schools, networking companies etc.

Tabl-5 Average Annual Household Expenditure

S. No	Expenditure	Villages		Total
		V1	V2	
1.	Food	64800 (50.9)	77100 (55.1)	70900 (53.1)
2.	Dress	28000 (22.1)	31600 (22.6)	29800 (22.3)
3.	Education	25200 (19.8)	22200 (16)	23700 (17.8)
4.	Electricity	5700 (4.5)	5700 (4)	5700 (4.3)
5.	Health	3500 (2.7)	3200 (2.3)	3300 (2.5)
Total		127200 (100)	139800 (100)	133400 (100)

Source: Computed from primary data

Note: Figures in the parentheses denotes percentages to the column total

Food expenditure pattern of the households is the best indicator of the existing economic condition of a community. The villagers have to spend for Food, Dress, Education, Electricity, Health and Others. Table-5 shows that on an average, the annual family expenditure stood at Rs133400. They have to spend the same for Food (53.1), Dress (22.3%), Education (17.8%), Electricity (4.3%). Next to this they spent on Health (2.5%). Same pattern of expenditure could be observed in both villages. The sample respondents spent (17.8%) on education, which is to be appreciated. Education may bring awareness to the people in utilizing the government programmes like NREGA there by strengthening the available resources.

Table-6
Average Annual Household Savings

S. No	Annual Family Saving	Villages		Total
		V1	V2	
1.	Post Office Saving	1500 (1.2)	1100 (1.2)	1300 (1.2)
2.	Bank Deposits	82000 (60.8)	52000 (56.1)	67000 (58.9)
3.	Cash	39000 (28.9)	32400 (35.0)	35700 (31.4)
4.	Private Saving	7400 (5.5)	4400 (4.8)	5900 (5.2)
5.	Life Insurance	4900 (3.6)	2600 (2.9)	3700 (3.3)
Total		134800 (100)	92500 (100)	113600 (100)

Source: Computed from primary data

Note: Figures in the parentheses denotes percentages to the column total

Table-6 shows that average household savings is recorded to the tune of Rs 113600. Of the six sources of savings identified in the study area, bank deposits (58.9%) occupies higher level, followed by savings in cash (31.4%), private savings (5.2%) and savings from Life insurance is (3.3%).

Table-7
Performance of MGNREGA Activities of the Sample Respondents

Nature of work	V1				V2			
	N=45				N=45			
	Distribution of working days				Distribution of working days			
	Below-50	51-75	76-100	Total	Below-50	51-75	76-100	Total
Road Maintenance	4 (44)	7 (55)	14 (87)	25 (71)	3 (47)	6 (63)	14 (89)	23 (77)
Canal slit Removal	2 (38)	4 (69)	7 (85)	13 (73)	2 (43)	3 (72)	8 (90)	13 (79)
Drain Construction	2 (37)	2 (69)	3 (93)	7 (70)	2 (44)	3 (70)	4 (94)	9 (75)
Total	8 (41)	13 (62)	24 (87)	45 (72)	7 (45)	12 (67)	26 (90)	45 (77)

Source: Computed from primary data

Note: Figures in parentheses denote average working days

Table-7 reveals the average number of days worked in asset creation activities in the villages V1 and V2. In V1 out of the 45 respondents, the majority of the respondents 25 worked in the road maintenance. On an average 25 respondents worked 71 days of employment. 13 respondents worked in canal slit removal, and on an average they worked 73 days of employment. And 7 respondents worked in drain construction, and on an average they worked 70 days of employment. All the 45 respondents on an average worked 71 days in all the three activities of work. In village V2 out of the 45 respondents, the majority of the respondents 23 worked in road maintenance category. On an average these respondents worked 77 days of employment. 13 respondents worked in canal slit removal and on an average they worked 79 days of employment. Only 9 respondents worked in drain construction and on an average they worked 75 days of employment. All the 45 respondents worked on an average 77 days of employment. On comparing both the villages, the respondents of the village V2 worked more number of days as compared to the respondents of the village V1. This is because the village V1 is near to town and the people of the village went to town for doing other jobs at higher wage rates. On the other hand, the village V2 is a far flung village and the respondents of the village have least opportunities for other jobs. This is the main cause for doing more days of work in village V2 and less number of days of work in V1.

Table-8
Income and Performance of MGNREGA in the Sample Study Area

Nature of work	V1				V2			
	N=45				N=45			
	Average Wage Income				Average Wage Income			
	Below-Rs 6550	Rs 6551-9825	Rs 9826-13100	Total	Below-Rs 6550	Rs 6551-9825	Rs 9826-13100	Total
Road Maintenance	4 (5764)	7 (7205)	14 (11397)	25 (9301)	3 (6157)	6 (8253)	14 (11659)	23 (10087)
Canal slit Removal	2 (4978)	4 (9039)	7 (11135)	13 (9563)	2 (5633)	3 (9432)	8 (11790)	13 (10349)
Drain Construction	2 (4847)	2 (9039)	3 (12183)	7 (9170)	2 (5764)	3 (9170)	4 (12314)	9 (9825)
Total	8 (5371)	13 (8122)	24 (11397)	45 (9432)	7 (5895)	12 (8777)	26 (11790)	45 (10087)

Source: Computed from primary data

Note: Figures in parentheses denote average wage income

Table-8 shows the average wage income earned by the sample respondents from the activities of MGNREGA in villages V1 and V2. In V1 out of the 45 respondents, the majority of the respondents 25 worked in the road maintenance. On an average they earned Rs 9301. 13 respondents worked in canal slit removal, and on an average they earned the wage amount Rs 9563. And 7 respondents worked in drain construction, and on an average they earned the wage amount of Rs 9170. All the 45 respondents on an average earned wage amount of Rs 9432. In village V2 out of the 45 respondents, the majority of the respondents 23 worked in road maintenance category. On an average these respondents earned the wage amount of Rs 10087. 13 respondents worked in canal slit removal and on an average they earned the wage amount of Rs 10349. Only 9 respondents worked in drain construction and on an average

they earned the wage amount of Rs 9825. All the 45 respondents worked on an average earned the wage amount of Rs 10087. On comparing both the villages, the respondents of the village V2 earned more wage amount as compared to the respondents of the village V1. This is because the village V1 is near to town and the people of the village went to town for doing other jobs at higher wage rates. On the other hand, the village V2 is a far flung village and the respondents of the village have least opportunities for other jobs. This is the main cause for doing more days of MGNREGA works in village V2 and less number of days of work in V1.

Table-9
Age-Group Wise Participation of the Respondents in the MGNREGA Activities

S.No.	Age in Years	V1				V2			
		N=45				N=45			
		Working Days				Working Days			
		Below-50	51-75	76-100	Total	Below-50	51-75	76-100	Total
1.	18-30	2 (83)	2 (111)	3 (269)	7 (463)	1 (47)	4 (260)	6 (553)	11 (860)
2.	31-45	3 (135)	6 (377)	12 (1056)	21 (568)	2 (95)	6 (424)	9 (804)	17 (1323)
3.	46-60	2 (72)	5 (349)	3 (267)	10 (688)	1 (40)	2 (144)	8 (725)	11 (909)
4.	Above 61	2 (72)	3 (217)	2 (186)	7 (475)	1 (47)	2 (133)	3 (282)	3 (462)
Total		9 (362)	16 (1054)	20 (1778)	45 (3194)	5 (299)	14 (961)	26 (2364)	45 (3554)

Source: Computed from primary data

Note: Figures in the parentheses are total number of days.

Table-9 shows the total number of respondents worked under the age group of respondents in the activities of MGNREGA in villages V1 and V2. In V1 out of the 45 respondents, the majority of the respondents are 21 come under the age group of 31-45 and they worked 568 days. 10 respondents are under the age group of 46-60 and they worked 688 days. 7 respondents come under the age group of 18-30 years and they worked the 463 days. 7 respondents come under the age group of above 61 years and they worked 475 days. All the 45 respondents worked 3194 days of employment. In village V2 out of the 45 respondents, the majority of the respondents are 17 which come under the age group of 31-45 and they worked 1323 days. 11 respondents come under the age group of 46-60 and they worked 909 days. 11 respondents worked under the age group of 18-30 years and they worked the 860 days. 3 respondents come under the age group of above 61 years and they worked 462 days. All the 45 respondents worked 3554 days of employment. In both the villages, the majority of the respondents come under the age group of 31-45 and 46-60 years and worked more days of employment, because these were the middle aged respondents and they are busy with their family matters and has no other options to go outside for other works .alternatives of work.

Table-10**Days of Employment Generated by Respondents from MGNREGA Per annum**

S.No.	Days	Villages		Total
		V1	V2	
1.	Below 50	8 (41)	7 (45)	15 (43)
2.	51-75	13 (62)	12 (67)	25 (64)
3.	76-100	24 (87)	26 (90)	50 (89)
Total		45 (72)	45 (77)	90 (75)

Source: Computed from primary data

Note: Figures in parentheses denote average working days

Table-10 shows the number of days of employment availed by the sample respondents in the study area. This table gives an idea why the respondents have not opted for all the days of employment. After reading the data, it has been grouped into three classes. It is interested to note that in all the classes there are entries. It reveals that the sample respondents have availed the employment depending on their need. On comparing both the villages, the respondents of the village V2 worked more number of days as compared to the respondents of the village V1. This is because, the village V1 is near to town and the people of the village went to town for doing other jobs at higher wage rates. On the other hand, the village V2 is a far flung village and the respondents of the village have least opportunities for other jobs. This is the main cause for doing more days of work in village V2 and less number of days of work in V2. The total 90 respondents on an average worked 75 days of employment in one year in the study area.

Table-11**Wage Income Generated by Respondents from MGNREGA Per annum**

S.No.	Wage Income	Villages		Total
		V1	V2	
1	Below 6550	8 (5371)	7 (5895)	15 (5616)
2	6551-9825	13 (8122)	12 (8777)	25 (8436)
3	9826-13100	24 (11397)	26 (11790)	50 (11601)
Total		45 (9432)	45 (10087)	90 (9760)

Source: Computed from primary data

Note: Figures in parentheses denote average wage income

Table-11 shows the Wage income earned by the sample respondents from the MGNREGA works. The wage income of respondents is categorised into three classes. In V1 out of the 45 respondents the majority of the respondents are 24 and they come under the income category of below Rs 6550.13 respondents come under the income category Rs 6551-9825. 8 respondents come under the income category of Rs 5371. In V2 out of the 45

respondents the majority of the respondents are 50 and they come under the income category of Rs 9826-13100. 25 respondents come under the income category Rs 6551-9825.15 respondents come under the income category of Rs 5371. The respondents of the V2 earned more wage income as compared to the V1 because the respondents of the village V1 went to the town to search for other jobs at high market wages. On the other hand the V2 is a far flung village and the respondents cannot search other jobs. They take part actively in MGNREGA works. All the 90 respondents on an average earned wage income of Rs 9760.

Table-12
Payment of Wages among the Sample Respondents

S.No	Payment of wages	V1		V2		Total		
		Yes	No	Yes	No	Yes	No	
1.	Availing weekly wage payment?	3	42	7	38	10	80	90
2.	Recording the wage payment on the muster roll and job card?	37	8	36	9	73	17	90
3.	As per the guidelines and measurement, wages are given?	42	3	35	10	77	13	90
4.	Availed wages within 15 days?	30	15	33	12	63	27	90
5.	Received wages on the work spot?	2	43	40	5	42	48	90
6.	Received wages in the panchayat office?	-	45	-	45	-	90	90
7.	Received wages through bank?	45	-	45	-	90	-	90

Source: Computed from primary data

Note: Figures in parentheses denote percentages to row total.

Table-12 Shows the number of respondents giving answers to the questions regarding the payment of wages received in the study area. About the answer of the question (1) Availing weekly wage payments? Out of the 90 respondents, 10 respondents answer was Yes and 80 respondents answer was No. About the answer of the question (2) Recording the wage payment on the muster roll and job card? Out of the 90 respondents, 73 respondents answer was Yes and 17 respondents answer was No. About the answer of the question (3) As per the guidelines and measurement, wages are given? Out of the 90 respondents, 77 respondents answer was Yes and 33 respondents answer was No. About the answer of the question (4) Availed wages within 15 days? Out of the 90 respondents, 63 respondents answer was Yes and 27 respondents answer was No. About the answer of the question (5) Received wages on the work spot? out of the 90 respondents, 42 respondents answer was Yes and 48 respondents answer was No. About the answer of the question (6) Received wages in the panchayat office? Out of the 90 respondents, 90 respondents answer was No. About the answer of the question (7) Received wages through bank? Out of the 90 respondents, 90 respondents answer was Yes.

MAJOR FINDINGS

1. It was found that majority of the respondents belong to middle class age group (42.2%) where young and aged constitutes less comparatively.
2. It was found that majority of the sample respondents (86.7%) were males and (13.3%)

of the respondents were females.

3. The household members are scattered in all educational categories from primary level education to collegiate. Majority of the respondents are educated up to secondary (34.4%) percent and higher secondary school level (20%).
4. Majority of sample respondents (32.2%) were agricultural labourers, (27.8%) of them were daily wagers, businessman (24.4%) and farmers (15.6%).
5. On an average, per household annual income is Rs 486100 where income from agriculture is (45.6%) and from daily wage earner is (19.5%) contributes more towards other sources.
6. On an average, per household annual expenditure stood at Rs 133400 and they have spent the same for food (53.1 %), dress (22.3%) and education (17.8%) respectively.
7. On an average, per household annual savings is Rs 113600 where majority of savings is as bank deposits (58.9%) and as cash is (31.4%).
8. The scheme also creates vital physical assets in the villages, wherethey renovate, build and rebuild the existing infrastructure in the rural areas aiming to enhance the agricultural productivity. Physical assets like road maintenance, canal slit removal and drain construction has been created under this programme with a view to filling in the critical infrastructural gaps in rural areas and enhancing the quality of life of rural people.
9. The government provides 100 days of guarantee employment to a family during the financial year. The overall performance in getting the employment opportunities differ significantly, it could be seen under the three class intervals below 50, 51-75 and 76-100 days of employment.
10. It was found that majority of the respondents 48 participated in the road maintenance activities.
11. It was found that on an average, respondents worked 75 days of employment in one year (2012-13).
12. It was found that the respondents on an average earned the wage income of Rs 9760 in one year (2012-13).
13. It was found that only 2 female respondents between the age group of 18-30 years participated in the MGNREGA works.

POLICY SUGGESTIONS

1. The MGNREGA provides 100 days of employment to the rural households during one year which is not sufficient for them. The days of employment should be increased, so that the people will get the employment during the lean agricultural season when employment opportunities shrink.
2. The act aims at eradication of extreme poverty and at making villagers self sustaining through productive asset creation. For this purpose the government should give the first priority in issuing the job cards to the weaker sections of the society i.e the people living under below poverty line.
3. The wage rate has to be revised regularly on par with the local wages, considering the general level of prices. These steps attract the labour force and also produce or strengthen the infrastructure and utilize the earmarked fund within the stipulated period.
4. There is a practice in giving attendance and not doing the assigned work effectively or

taking rest and going home. The practice is noticed in the study area at different levels with the co-operation of all the stake holders. Steps should be taken immediately and the institutions have to ensure the utilization of the scheme.

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WEB MINING TECHNIQUES FOR KNOWLEDGE DISCOVERY AND ITS IMPORTANT IN BUSINESS INTELLIGENCE: A STUDY

Kodukula Subrahmanyam¹, Dr. Rashi Agarwal²

Department of Computer Science

^{1,2}Shri Venkateshwara University, Gajraula (Uttar Pradesh)

Abstract

This Research analyzes past examples of overcoming adversity, the ebb and flow endeavors, and future headings of 'Web mining' as an application for business computing. Models are given in various business angles, for example, item proposals, misrepresentation recognition, process mining, stock management, and how the utilization of Web mining will empower development income, limit expenses, and upgrade vital vision. Holes in existing technology are likewise clarified, along with pointers to future bearings. Web mining is the utilization of data mining techniques to extricate knowledge from Web data, including Web reports, hyperlinks among records, and use logs of Web locales. The proposal for utilizing web mining techniques can be connected effectively with a sharp analysis of plainly comprehended business needs and prerequisites. Additionally, one all the more administering element is the measure of data, as the data is voluminous. The outcomes can be more towards the right patterns and examples to be anticipated from the given arrangement of data.

1. OVERVIEW

We live in a data-driven world, the immediate consequence of approaches in information and communication technologies. A large number of resources for knowledge are made conceivable gratitude to the Internet and Web 2.0 coordinated effort technologies. Never again do we live in disconnection from immense measures of data. The Information and Communication Technologies unrest gave us comfort and simple entry to information, versatile communications, and even conceivable commitment to this measure of information. Additionally, the need for information from these huge measures of data is much all the more squeezing for undertakings. Mining information from crude data is a very crucial and repetitive procedure in the present information-driven world. Endeavors today depend on a lot of computerized apparatuses for knowledge discovery to pick up business understanding and intelligence.

Numerous parts of knowledge discovery devices were created to help the present aggressive business markets flourish in the time of information. World's electronic economy has likewise pressed endeavors to adjust to such new business condition. Principle apparatuses for getting information from these large sums are computerized mining devices, explicitly data mining, content mining, and web mining. Data Mining (DM) is characterized as the way toward investigating huge databases, more often than not data distribution centers or internet, to find new information, shrouded examples, and practices.

In real-time data, technology has created and utilized an extensive measure of databases and put away huge data in different areas. The research in databases and data technology has offered to ascend to a way to deal with store and control this valuable data for further basic leadership [1]. Data mining is a process of removing already obscure and process capable data from substantial databases and utilizing it to settle on important business choices. It is additionally called a knowledge discovery process; Data mining ought to be utilized only for the discovery phase of the KDD process.

Data mining is the center piece of the knowledge discovery process. In this, the process may comprise of the accompanying advances Data choice, Data cleaning, Data change, design looking (data mining), discovering an introduction, discovering elucidation and discovering

assessment. Data mining and KDD frequently utilized conversely because Data mining is the key piece of the KDD process[2]. The term Knowledge Discovery in Databases or KDD for short alludes to the wide process of discovering knowledge in data and stresses the "abnormal state" utilization of specific data mining methods.

It is important to researchers in AI, design acknowledgment, databases, measurements, man-made consciousness, knowledge securing for master systems, and data perception. The binding together objective of the KDD process is to remove knowledge from data with regards to extensive databases. It does this by utilizing data mining methods(algorithms) to extricate (distinguish) what is esteemed knowledge, as per the particulars of measures and edges, utilizing a database alongside any required preprocessing, sub testing, and changes of that database.

KDD process

The knowledge discovery process is iterative and interactive, consisting of nine steps [3].Note that the process is iterative at each step, meaning that moving back to previous steps may be required .So it is required to understand the process and the different needs and possibilities in each step. A typical knowledge discovery process and the process is elaborated in each step

- Developing an understanding of the application domain
- Selecting and creating a data set on which discovery will be performed.
- Preprocessing and cleansing.
- Choosing the appropriate Data Mining task.
- Choosing the Data Mining algorithm.
- Employing the Data Mining algorithm.
- Evaluation.
- Using the discovered knowledge.

The terms of knowledge discovery and data mining are unmistakable. KDD alludes to the general process of finding helpful knowledge from data. It includes the assessment and perhaps elucidation of the examples to settle on the choice of what qualifies as knowledge. It likewise incorporates the decision of encoding plans, preprocessing, inspecting, and projections of the data before the data mining step. Data mining alludes to the use of calculations for separating designs from data without the extra strides of the KDD process.

2. HOW WEB MINING CAN ENHANCE MAJOR BUSINESS FUNCTIONS

This section discusses existing and potential efforts in the application of Web mining techniques to the major functional areas of businesses. Some examples of deployed systems as well as frameworks for emerging applications yet-to-be-built are discussed. However, the examples are no means to be regarded as solutions to all problems within the framework of business function they are cited in. Their purpose is to illustrate that Web mining techniques have been applied successfully to handle certain kind of problems, providing the evidence of its utility[3-6].

Marketing

Marketing is typically defined as: "Marketing is the ongoing process of moving people closer to making a decision to purchase, use, follow or conform to someone else's products, services or values. Simply, if it doesn't facilitate a 'sale', then it's not marketing" Marketing is responsible for keeping the enterprise attentive to market trends, as well as keeping the sales unit aware of where the target segment is. In the following examples, we illustrate how Web

mining techniques have been used for marketing products to a customer and also to identify possible new areas of potential market for an enterprise.

Product recommendations

Prescribing items to buy is a key issue for all businesses. As the customer-driven methodology drives the present business models, customary physical stores need to depend on data gathered unequivocally from customers through studies to offer customer-driven proposals. In any case, the approach of web-based business not just empowers a dimension of closeness in customer-to-store connection (that is far more noteworthy than conceivable in the physical world), yet in addition prompts remarkable data collection, particularly about the 'process of shopping'.

Product area and trend analysis

"With the past, we can see directions into the future - both cataclysmic and imaginative projections." Businesses might want to see such projections onto what's to come. Extraordinarily, recognizing new item regions dependent on patterns is key for any business to catch markets. Expectation utilizing pattern analysis for another item more often than not addresses two sorts of issues. Also, a solitary item may result in a stage to build up a class of items that have a high potential market.

Human resources

In any enterprise, the expansive duty of the Human Resource office is to coordinate the privilege gifted workforce with the correct capacity effectively. HR is likewise mindful of building up strategies, rules and to give tools to representatives and management to empower a wonderful work air, solid culture, sound, and spare condition, and to guarantee that the company's representatives are reliably getting roused. The accompanying application looks at how to adequately oversee human resource office by keeping up the perfect measure of the workforce as far as post-viability. It shows the utilization of Web mining techniques to lessen pointless human remaining task at hand.

Sales management

In an enterprise, sales are a key responsible function that sells the enterprise's core-competency to customers, usually, with the final goal of bringing in and maximizing revenue from them. As is intuitive, in order to maximize the sales revenue, it is important to both bring in the customers to door, as well as to execute a good sales and operations management strategy, thus resulting in the final sale. Identification of new sales opportunities and the associated risks plays a crucial role in deciding new projects.

Business opportunity risk evolution

With developing aggressive markets, better comprehension of customer's necessities and coordinating those to the enterprise's contributions have picked up unmistakable quality in an enterprise's basic leadership processes.

3. BUSINESS PROCESS MANAGEMENT IN MINING

The term Business Process Management (or BPM) alludes to exercises performed by businesses to upgrade and adjust their processes. Any business exchange can be modeled as an arrangement of processes that are intended to play out some particular assignments by increasing the value of the entire exchange. There can be many bottleneck processes in business exchange, and these bottlenecks can seriously hinder the entire exchange. It is fundamental to decide these bottlenecks in a process with the goal that we can overhaul the business process model and, in this way,, improve limit usage, throughput rate, and process time. Business Process Management itself contains overseeing plan, execution, and observing of a process.

In the accompanying precedent, we show how Web mining techniques can be connected to occasion logs from different processes to grow better models for various processes Business process mining, additionally called work process mining, uncovers how existing processes work and, in this manner giving significant ROI (PMR). Business process mining is the errand of extricating helpful information from business occasion logs gathered by Workflow Management Systems, for example, IBM's WebSphere and SAP R/3. ProM, EMiT and Thumb are a few instances of business process mining tools.

4. THE FUTURE OF WEB MINING IN BUSINESS

We believe that the future of Web mining is entwined with the emerging needs of businesses, and the development of techniques fuelled by the recognition of gaps or areas of improvement in existing techniques. This section examines what is on the horizon for Web mining, the nascent areas currently under research, and how they can help in a business computing setting.

Micro Formats

It is critical to not exclusively to exhibit the correct content on a Web website, yet also in the correct arrangement. For instance, an initial phase in organizing for the Web was the utilization of to give the program's capacity to parse and show a message in a progressively clear and satisfactory organization. Be that as it may, researchers before long created configurations with higher semantics and adequacy

5. WEB MINING: A KEY TO IMPROVE BUSINESS ON WEB

The information on the internet is in the form of static and dynamic web pages of various areas from education, industry to every walk of life including blogs. As per the web sites' survey more than 160,000,000 web sites are having interred, intra linked web pages. The speed of increase of web information is rapid. The hidden knowledge discovery, patterns and trends of user access can be found from the way the web sites and web pages are accessed and it is useful from the business perspective giving future directions for decision making. The Data Mining techniques help in identifying the patterns implying the future trends in the studied data.

The Web Mining is an application of the data mining techniques to find interesting and potentially useful knowledge from web data. Infinite web pages are either used or unused by users adding to large volume of space and their occurrence in web searches. 30- 40 % web pages are having duplication of the content approx. Best estimate of unique static HTML pages is in billions from widely used search engines such as Yahoo, Google and increase continually. The following table shows the facts of web sites increase from 1995 till February 2008.

6. KDD FOR BUSINESS INTELLIGENCE

Over the past few decades, the industrialized economy has been going through a transformation from being based on natural resources to being based on intellectual assets. The knowledge-based economy is a reality. Rapid changes in the business environment cannot be handled in traditional ways as companies are expanding and are much larger today than they used to be, fueling the need for better tools for collaboration, communication and knowledge sharing. Competing in the globalized economy and markets requires quick and effective response to customer needs and problems. For companies spread over wide geographical areas and virtual organizations, managing knowledge is critical for providing services. Companies must develop the strategies to sustain competitive advantage by leveraging their intellectual assets for optimal performance.

7. CONCLUSION

The research and execution of a support system for Knowledge Discovery is the test of numerous researchers. As Web Data Mining is the primary key advance in Knowledge Discovery process in Databases (KDD), web data extraction assuming the job of data gathering from the web and data mining methods on the removed downright data to find knowledge. This research is proposing an approach to apply the clustering idea on all-out web data and to utilize the clustering results as a component of the contribution for the characterization led on another arrangement of data.

Web mining is an extremely hot research theme which joins two of the actuated research regions: Data Mining and World Wide Web. The Web mining research identifies with a few research networks, for example, Database, Information Retrieval, and Artificial Intelligence. Even though there exists very some perplexity about Web mining, the most perceived methodology is to order Web mining into three territories:

The qualification between these two classes is not reasonable some of the time. Web utilization mining is relatively free, yet not disengaged, class, which mostly portrays the techniques that discover the client's use example and attempt to foresee the client's practices. This research is a review dependent on them as of late distributed research papers. Other than giving a general perspective on Web mining, this research will concentrate on Web use mining.

Potential applications can be On-line social networking network software applications can utilize web mining techniques to investigate the viability of on-line networking, additionally regions, for example, knowledge management web destinations and web mining can likewise be valuable in bioinformatics, e-administration, and e-learning. In this research, we review the researches in the region of Web mining with the emphasis on Web Usage Mining. Three perceived sorts of web data mining are presented by and large. Around the key subject of this research - use mining, we give a definite portrayal of the three periods of the process. A case of a use mining system is given to represent the general utilization mining process. Besides, the research of real applications of use mining – personalization and route design discovery are examined. At last, we wrap up this research with the most disputable subject - client security. Other than the speculation of the flow research work, we likewise attempt to explain some perplexity and uncover the up-to-data research issues. This research examines the date impact of data mining strategy in business intelligence.

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CONNECTION TO THE MACHINE - BRAIN COMPUTER INTERFACE

Himanshu Sekhar Acharya¹,

Computer Science,

Ravenshaw University, Cuttack, Odisha, India, himanshu_acharya@rediffmail.com

Sashi Bhusan Nayak²,

Computer Science, Ravenshaw

University, Cuttack, Odisha, India, sashibhusannayak.cs@ravenshawuniversity.ac.in

Abstract

Brain wave is a generic term used to refer to the electrical impulses generated by the neurons or during interaction between them. These impulses also known as Neural Oscillations can be observed by the measuring technique known as Electroencephalogram (EEG). Brain-computer interfaces (BCI) are direct connections between the brain and a computer. Regulation of neuroelectrical activity or brain activity as a response to sensory stimulation is used to replace or improve lost or impaired function. More details are explained in the paper like how brain waves affect human body and what impact yoga have on our brain?

Keywords:

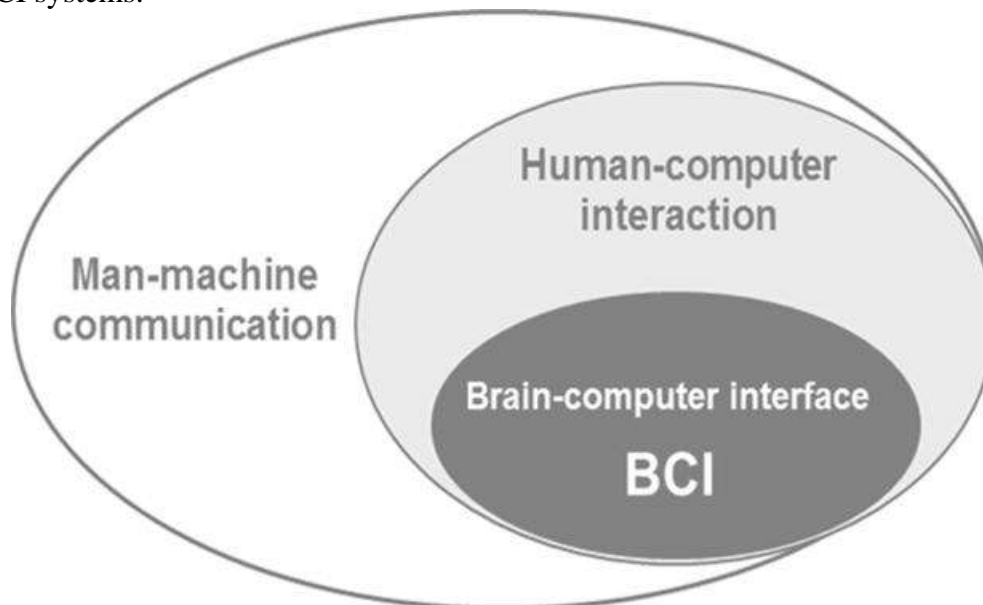
BCI, Brain waves, Impact of yoga on brain.

1. Introduction

A natural way for humans to communicate with the outside world is to use some individual muscles of the human body. Intentions born in the human brain are transmitted through the nervous system to selected parts of the body and stimulate their movement. Speech (throat, tongue, lips) is predominantly used for communication among people, as are also fingers in case of the sign language. Man-machine communication (MMC) means a type of communication where the same principles can be applied. Some simplification of the problem is a human-computer interaction (HCI) which traditionally involves a keyboard, touchpad and/or a mouse. An alternative way is to use a microphone and a sound board to issue voice commands or a camera to provide instructions in form of facial expressions and/or hand placement. Finally, we can imagine controlling a computer via electrical signals extracted from various parts of the peripheral nervous systems or even from the central nervous system

- directly from the brain. The last type of communication is called a brain-computer interface (BCI). The main task of a brain-computer interface is to allow communication with the outside world for patients with severe stages of neurological diseases such as amyotrophic lateral sclerosis, cerebral subcortical stroke, Guillain-Barré syndrome, cerebral palsy or multiple sclerosis. Measuring brain activity is centrepiece to BCI. However, detection of brain activity as such is not sufficient. BCI systems cannot read any "human thoughts". They can only classify some selected states of brain activity, associated with specific events or stimuli. Generally, the main task given to a user of the brain-computer interface is to "generate" appropriate models of brain activity by using certain mental strategies. Those strategies define what a BCI user has to imagine or on what event his attention has to focus in order to "generate" appropriate EEG waves. Some strategies require long training. Therefore, practical realization of a brain-computer interface requires several basic conditions

to be fulfilled. Firstly, the system has to selectively measure brain activity. Next, user feedback has to be implemented. Finally, the system must have a “control block” to execute user's intentions. Devices that measure, in a passive manner, certain changes in brain activity, without the need to “read” user’s intentions (e.g. medical EEG recorders) are considered not to be BCI systems.



EEG signals can be classified based on skull positions, frequency ranges, amplitudes, signal waveforms, periods and signal- induced actions. Basically, the EEGs signals are synchronize when the external stimulated has been measured. The EEG signal passes through Dura, cerebrospinal fluid and skull to scalp will produces peak-to-peak amplitude is only about 1 ~ 100 μ V with frequency range 0.5 ~ 100 Hz. In addition, the electrode material, contact tightness and electrode paste may even affect the recordings due to some unpredictable noise which interfere with EEG detection. Brain waves are measured in cycles per second or Hertz (Hz) also known as frequency of brain wave activity Brain-computer interface is nothing but the interaction between the human neural system and machines, it is a control system which enables the people to communicate [5] and control a device by mere thinking. This is done through three steps 1st step is to get the signal acquisition from the (user’s) human brain and sends the digital signal to the signal processing unit which contains two blocks namely i)feature extraction, ii)translation, here the signal is processed and sends the commands to BCI application and the application acts accordingly.

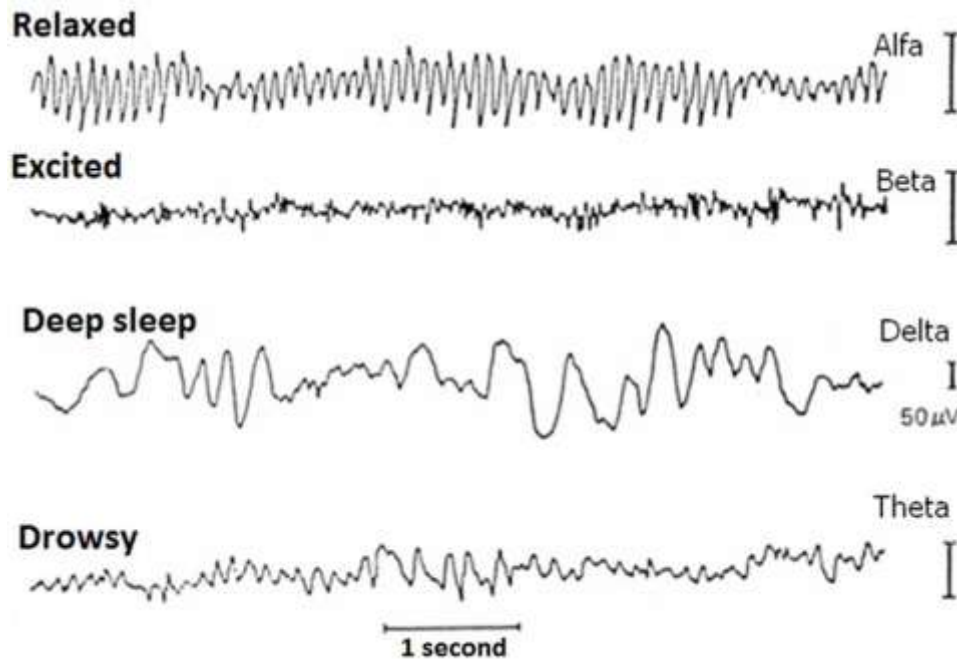
2. Methods of detecting brain activity

Brain activity - related to neuronal activity - boils down to the motion of electric charges which produce electric and magnetic fields. Brain-computer interfaces measure that activity of the brain which is the consequence of certain stimuli or mental task. Suitable sensors, placed or attached close to the selected areas of the brain, allow measurement of both electric and magnetic brain activity.

3. Electroencephalography (EEG)

Electroencephalography (EEG) is a non-invasive method of measuring the bioelectrical activity of the brain. Signals are acquired through electrodes placed on the surface of the scalp which detect potential changes caused by the activity of neurons of the cerebral cortex.

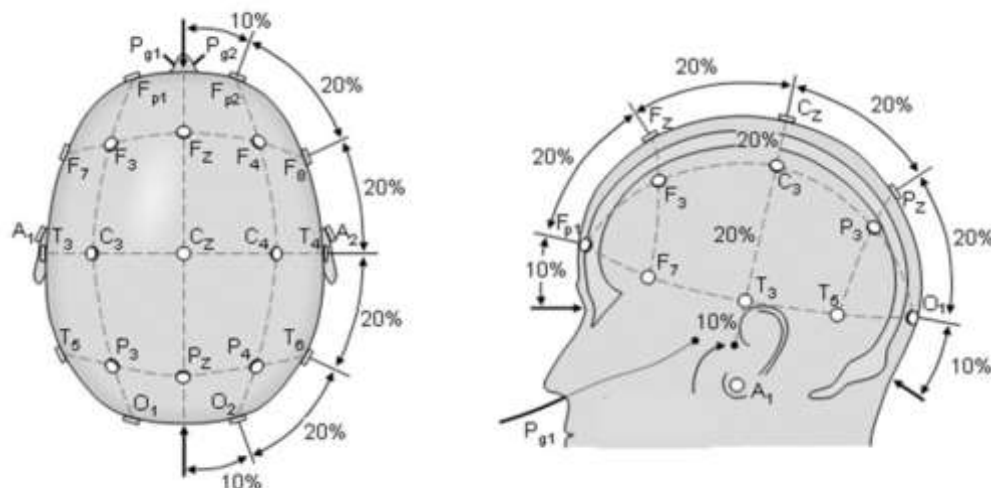
EEG is very useful to monitor and diagnose epilepsy, sleep disorders, head trauma, brain tumours, disorders of consciousness and other brain conditions. The examination itself is not unpleasant for the patient, and lasts 15 to 20 minutes. During the test, the patient sits or lies comfortably with electrodes stuck to the scalp. Position the patient assumes depends on what is the purpose of the examination. Typically 6 to 64 electrodes are used (there are also known solutions using a much greater number of electrodes, e.g. 256). Usually, the electrodes are attached using an adhesive paste (gel) and are connected through an amplifier to a recording device.



The measured EEG signal is largely an individual feature and varies depending on the psychophysiological state of a person. Both the signal amplitude and dominant frequencies undergo changes. It is assumed that a healthy human brain generates waves at frequencies ranging from 0.5 Hz to 100 Hz and amplitudes from several to several hundred μV . There are some distinctive rhythms of the EEG signal, usually slightly different defined by various authors :

- **alpha** rhythms with frequencies from 8 Hz to 13 Hz, which are particularly evident during the absence of visual stimuli,
- **beta** rhythms with frequencies from 12 Hz to 30 Hz, which can be seen in the frontal region of the brain and are observed during concentration,
- **gamma** rhythms found between 30 Hz – 100 Hz, which can be seen during motor activities,
- **delta** rhythms with frequencies from 0.5 Hz to 4 Hz, which can be observed at stage 3 and 4 of sleep,
- **theta** rhythms with frequencies from 4 Hz to 8 Hz, which occur during light sleep and are observed during hypnosis,
- **mu** motor rhythm in the range 8 Hz \square 12 Hz which is used in Motor Imagery (MI) BCI paradigm.

Normally during an examination, a set of 19 EEG electrodes is used, according to the so called 10-20 system, which is recommended by the International Federation of Clinical Neurophysiology (IFCN) . In a brain-computer interface which does not have to comply with medical standards, a different number of electrodes can be used, sometimes up to 512, according to need. The number of electrodes (BCI channels) and their distribution on the scalp is one of the major problems of BCI.



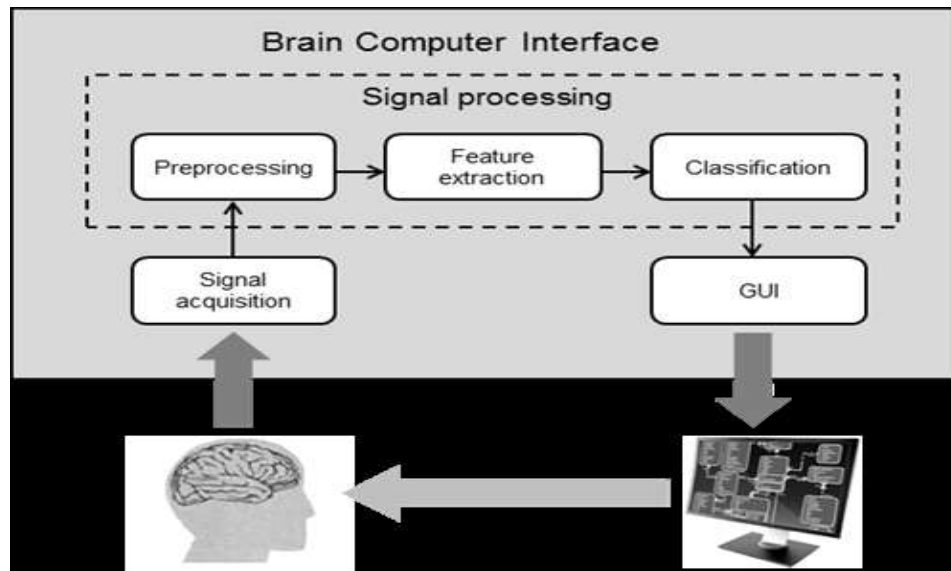
4. Brainwaves Table

	Brainwave Frequency	Experience	Helpful For	Neurotransmitters Hormones
Lambda	200Hz - Higher	Ecstatic experiences, Feeling of Oneness	Little study done	Not yet determined
Epsilon	100Hz - 200Hz	Ecstatic experiences, Feeling of Oneness	Little study done	Not yet determined
Gamma	40Hz - 100Hz	Ecstatic experiences, Feeling of Oneness	Deep meditation, (Samadhi, Nirvana, Satori, etc)	Serotonin, Endorphins
Beta (High)	22Hz - 40Hz	Anxiety, Nervousness, Panic Attacks	Not helpful	Adrenaline, Cortisol, Nor epinephrine
Beta (Mid to Low)	14Hz - 22Hz	Alertness, Focus, Concentration	ADD/ADHD, CFS, SAD	Dopamine
Alpha	8Hz - 14Hz	Peaceful, Relaxed, Daydream	Relaxation, Meditation, Anxiety, Stress, Panic, Focus	Serotonin, Endorphins
Alpha/Theta	7.83Hz Schumann Resonance	Calm, Meditative, Physically Relaxed, Sleepy	EMF resistance, Immune System, Insomnia	GABA, Serotonin, Acetylcholine, Endorphins
Theta	4Hz - 8Hz	Deeply Relaxed, Sleepy (REM stage sleep)	Deep Meditation, Insight, Creativity, Immune System	GABA, Serotonin, Acetylcholine, Anti-Cortisol, Endorphins, Human Growth Hormone
Delta	0.5Hz - 4 Hz	Deep Rest/Sleep (dreamless), Deeply Meditative (w/greatly reduced thought)	Deepest Meditation, Sleep	Human Growth Hormone, Melatonin

5. A review of EEG signal processing algorithms for use in BCI

In order to interpret and classify measured EEG potentials it is necessary to first extract and select their features. The feature extraction process delivers a set of values (data) which essentially describe signal properties. It can take place directly in the time domain or after

some transformation, for example to the frequency domain. Feature selection is commonly used in processing large data sets, in order to choose the best ones and at the same time, to reduce their number. This process, in many scientific papers, is considered centrepiece to classification accuracy.



There are many methods of feature selection known that are optimized for:

- increasing the effectiveness of classification,
- reducing computational effort,
- reducing the amount of stored data,
- reducing data redundancy.

6. Effect of yoga on brain

Studies are continuing to show that yoga practices can change your brain. A review of the literature in *Complementary Therapies in Clinical Practice* suggests that yoga may change not only brain structure but brain waves as well.

Yoga Changes Brain Wave Activity

Different types of brain wave activity are associated with a variety of different cognitive and emotional functioning. For example, *alpha waves* (8-13Hz frequency) are low amplitude signals that occur when a person is resting but still alert. Alpha waves are linked to decreased pain and discomfort, but also related to increased memory retrieval, improved word recognition, and the perception of calmness.

Beta waves (12-38 Hz) on the other hand occur during heightened states of awareness, and are associated with active concentration. Previous research correlates higher beta wave activation with increased academic performance, as well as decreased emotional exhaustion, generalized fatigue and state anxiety.

Theta waves (4-7 Hz) arise in the presence of repetitive tasks or when someone has established a relatively predictable routine. They are linked to short-term memory functioning. Like alpha waves, theta waves are associated with reduce anxiety.

When considering brain waves from the perspective of attention, concentration and relaxation it is easy to see why the relationship between yoga practices and brain waves presents an interesting proposition.

After reviewing and evaluating the literature researchers drew several conclusions:

1. Although the studies were of varying quality, there is general support for yoga practices (movement, breath exercises and meditation) being associated with positive brain states.
2. Changes in alpha brain waves associated with decreased pain and increased calmness were found after breathing, meditation and posture-based yoga practices.
3. Increases in beta wave activation, which is linked with improved task performance, were related primarily to breathing based yoga (*pranayama*). These included practices designed to achieve both activation (e.g. *Kapalabhati*) and relaxation (e.g. *AnulomaUjjayii*).
4. Theta wave activation, which is associated with repetitive tasks, decreases in anxiety and increases in focus, was found to increase after both *asana* (posture-based) and *pranayama* (breathing-oriented) practices.

Yoga and Structural Brain Changes

There is growing evidence of the relationship between regular yoga practice and improved mood, memory, and decreased perceptions of pain. Much of these experiences are controlled by the amygdala - a small, relatively round structure just adjacent to the hippocampus. The amygdala is the integrative center for emotions, emotional behavior, and motivation.

One study of Iyengar yoga students found decreased blood flow to the amygdala after 12-weeks of training. Increased cerebral blood flow to regions of the frontal lobes of the brain that are related to persistent focus and attention were also reported. Other studies suggest increased brain volume (which implies increased activation) in the frontal lobes of yoga and meditation practitioners.

Increases in the volume of gray matter in the hippocampus have also been detected following asana-based and pranayama-based yoga practices. The hippocampus is responsible for the consolidation of short-term memory into long-term memory as well as spatial navigation. This could be particularly important as reductions in hippocampal volume/hippocampal atrophy, are associated with a number of degenerative brain disorders associated with aging (i.e. Alzheimer's Disease, Parkinson's Disease and dementia).

Lastly, there is some evidence that individuals who had practiced yoga at least 4-10 times per week for 6-11 years had increased gray matter in the insular cortex. This increased volume was associated with a higher pain threshold when exposed to a pain-inducing, temperature-related stimulus.

7. Conclusion

Measuring specific brain waves throughout the EEG is not a trivial task. Such a system must implement typical functions known from measurement techniques like: data acquisition, data processing and data presentation. Signals acquired from electrodes have very small amplitudes and are strongly disturbed by noise and series of physiological and technical artifacts. Therefore those signals have to be carefully conditioned and then converted into digital form. Next action is sophisticated signal pre-processing. After that, an EEG signal is ready for feature extraction. There are several feature extraction algorithms. Each of them is

expected to generate features which will, to the greatest possible extent, describe selected properties of the signal in the current application. There is often need to eliminate some redundant features throughout the selection process. Finally, the classification process is implemented to feature vectors. Then some control process can be executed. At the same time BCI system quality should be evaluated.

Design and implementation of brain-computer interfaces is one of greatest challenges posed to modern science. This is proved true by numerous publications in scientific journals as well as extensive media coverage. The possibility of direct human-computer interaction (without manual manipulation of peripheral devices) opens new channels of communication in medicine, psychology, media and military. Use of such an interface in medicine is of particular importance, both in terms of studying human brain, and for supporting people affected by neurological inefficiency. Brain-computer interfaces can help people with severe neurological conditions such as amyotrophic lateral sclerosis, brain stroke, Guillain-Barré syndrome, amyotrophic lateral sclerosis, cerebral palsy or multiple sclerosis to communicate with the outside world. Many people suffer from amyotrophic lateral sclerosis, the neurodegenerative disease of the nervous system that destroys part of the central nervous system responsible for movement, but does not influence senses, cognitive abilities and intellect. People, who suffer from it, gradually lose control over their own body and within 2 to 3 years reach a state where they have no ability to communicate with the environment. Another group of people who could communicate with the environment by BCI are those who have strokes, particularly the brain stem strokes. Victims of traffic accidents, which resulted

in damage to the cervical spinal cord, could also belong to those groups.

The barriers to dissemination of direct brain-computer communication methods, using the EEG signals, are high price and complexity of the apparatus. In fact the amplifiers used for BCI are designed for applications in medical diagnostics, containing from 32 to 512 channels. In addition, they are usually designed to work with other types of medical equipment, often through a specialized interface whose communication protocol is not widely known. This raises the need for a dedicated, cheaper amplifier and other signal conditioning modules for use in BCI. Although, according to studies, it is possible to reduce the number of electrodes, their minimum number and location remain unknown. Besides, deployment of electrodes may be different for each user. The knowledge and intuition of a doctor is most helpful here. Also important is the fact that the features of the EEG signal can change with changes in mental states of the user. Additionally, in ERD/ERS interfaces the features strongly depend on the process of "imagining movement." Furthermore, the tools that enable quick and effective selection of the best features have not been tested thoroughly. Resolving those issues will help to overcome barriers to effective use of brain-computer interfaces in practice.

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A STUDY ON ENGINEERING STUDENTS EMPLOYABILITY SKILLS IN COIMBATORE DISTRICT

Dr E MUTHUKUMAR, Professor

Department of management

Nehru College of Management, Coimbatore-641105

B BHUVANESWARI, Research Scholar

Department of management

Nehru College of Management, Coimbatore

Corresponding author Dr E MUTHUKUMAR

ABSTRACT

With the worldwide rivalry on steady ascent, eliminate costs, advertise economy and concentrate on profitability in all circles no matter what. Clearly, the industry began searching for HR very much outfitted with all the required capabilities as occupation prepared officeholders. The institutional ecoframework, the businesses either fabricating merchandise or offering administrations were constrained to which was running on the old conventional approach, began feeling the warmth and thus initiated getting extra esteem-based sources of info other than specialized learning and abilities with a specific end goal to make the understudies comprehensively prepared.

Today employability is far greater a test than joblessness. Industry pioneers feel that the "aptitudes" and "quality" of the workforce require a great deal of change. Tormented with issues like educational modules, absence of qualified staff, low quality of substance, and not really compelling examination framework, specialized establishments don't give flagging an incentive in the activity advertise. What's more, subsequently a dissimilarity exists in the sort of abilities educated at universities and those that are requested in industry.

The present research report uncovers that Soft skills are affecting business, particularly of engineering students. Subsequently, the investigation is bound to engineering understudies as it were. The examination uncovers the way that jobless engineering youth are inadequate in soft skills abilities and unfit to take care of businesses demand the extent that aptitudes are worried. There is high requirement for soft skills mindfulness among the adolescent for expanding work openings. The soft skills improvement is call of great importance.

An Outline about Engineering College's Soft Skill Training Pattern

The present practices in proficient professional institutions are based on five key components:

1) Syllabus: Curriculum rattles off 'what' of showing/realizing process. Educational modules are a structure of what will be the extent of realizing, what will be a succession of different courses in connection to each other, what will be weight given to different subjects and whether the subject will be surveys just on term-end examination premise, or will there be a nonstop assessment by teachers. This is especially critical variable since understudies in India are very cognizant about evaluations.

2) Assets: The sources from where the thoughts and data are drawn from educators, or students: the books, articles, cases, individuals, films, library, diaries, daily papers etc.

3) Drill Work: The 'how' part of the process; from customary addressing to board exchange, participatory preparing, live tasks, and re-enactment and pretends, e-learning etc. The soft skill abilities are in space of preparing instead of educating, and strategies and time distribution for soft aptitudes improvement should be examined.

4) Mentors: A tutor conveys learning, as well as transmits he esteems and persona. The last being similarly gotten by students; how do the mentors measure up on this level? Mentors require characteristics and aptitudes required for exchanging the abilities. Coach adequacy relies upon the scope of the standard from enthusiasm to profundity, from correspondence to persistence.

5) Learners: The end-clients, who accompany their own learning style, weights, needs, desires, and level of duty. The jigsaw of soft skills improvement is fragmented without the understanding a student; it takes more than sitting in session for students to maximize soft expertise advancement mediations.

OBJECTIVES OF THE STUDY

- To analyse the demographic details of the student respondents
- To the impact of employability skills
- To make suggestions on the same towards the benefit of students and faculties

REVIEW OF LITERATURE

- 1. Rosetta Ziegler (2007):** It is important that engineering understudies create and upgrade essential relational abilities i.e. perusing, composing, talking and being proficient in the work environment. These aptitudes fabricate an important establishment that impacts and shapes the sorts of specialists that organizations of higher learning produce. The significance of these relational abilities frequently alluded to as "S5", are made light of in engineering Programs in favours of an overemphasis on the specialized "hard abilities". This mentality and practice incite convictions and states of mind that the "soft aptitudes" are auxiliary, even immaterial. Therefore, building understudies are frequently outfitted with specialized learning, yet an absence of the "soft abilities", abandons them under-arranged for this present reality of work. This paper investigates the thought of "Soft Skills" in a Mechanical Engineering training environment, with specific concentrate on understudy sees on the part and estimation of these abilities in teaching "new thousand years" engineers.
- 2. Lonice Morley (2007):** distinguished that instructive experience and process can contribute the advancement of employability ability and financial benefit can be exchanged on the generation and codification of capabilities and skills.
- 3. Artisan Et Al (2009):** found that organized work encounters a business contribution in degree course outline and convey have clear beneficial outcomes on the capacity of graduates to secure work in graduate's level employment. The solid effect of sandwich interest on work advertise execution is outstanding.

4. **Somalingam A. and R. Shanthakumari (2013):** The article endeavours to investigate employability aptitudes and capability of youthful building graduates in the corporate situation of India. Through the paper, the creator means to assess the present status of graduate specialists, their aptitudes of employability and capacities to work in the authoritative space. The creator investigates the different imperative soft abilities and capabilities which are must for architects to make them idealize fit in the association. The creator firmly recommends that in creating employability abilities among engineering understudies, instructive foundations and instructors assume a key part. For all the specialized foundations it is a critical assignment to change over youthful era of building graduates into employable graduates.
5. **T. SwarnaLatha (2013):** Soft abilities preparing is empowering and enabling the youthful graduates with appropriate behaviours and aptitudes to get great going in work environments. All the dialect educators ought to ascend as phoenix from the fiery debris of customary technique for granting learning and change over to advancement as for change in attitude, material and philosophy, which will change the classroom from instructor focused figuring out how to learner-focused figuring out how to improve the ability sets to suit to Industry needs. For accomplishing this, a move is particularly required at the levels of surrounding syllabus, showing approach and instructor's readiness to acknowledge and actualize change. The present situation resembles a reminder to dialect instructors which induces them to adjust to the changing needs and desires of the business.
6. **VaniBhagwathet al (2013):** the fundamental target of the review was, to toss light on the employability aptitudes required for administration graduates and to survey the employability abilities of MBA understudies specifically in the National Capital Region of Delhi. The reason for this review was to survey the employability aptitudes of MBA understudies of the chose administration establishments working at NCR. The examination configuration utilized for this review was an expressive correlational research outline. The review reasoned that, the foundations can do overhauling the educational modules or course content, enhancing their scholarly capital, Adopting ideal HR strategies.
7. **Shradhanjali. (2016):** The creator through the paper focusses on investigating the importance and centrality of soft aptitudes which are most imperative abilities for the engineering understudies in India. As it is the human capital is fundamental for expanding the proficiency of any association, it is important that those representatives involve an always expanding scope of gifts. Hence it is vital that hard aptitudes of the designers ought to be helped by soft abilities to take care of business one's profession and life. Highlighting the urgent change between soft abilities and specialized aptitudes, soft abilities, and employability aptitudes, the creator suggests that preparation in the space of correspondence, soft aptitudes and employability aptitudes will help designers to hold themselves in the expert rivalry and increase individual achievement.

RESEARCH METHODOLOGY

The present research is intended to scrutinize and understand the need of soft skills and communication skills in enhancing the performance level of engineering students in the corporate sector. Thus, an observatory cum survey method is planned to assess the usefulness of soft skills and communication skills in making engineers employable.

To conduct this study questionnaire and interviews will be used as primary tools to assess the need and role of communication skills and soft skills in refining the performance of engineering students in the organization. Observatory scheduled will be prepared to observe the teaching process of English teachers. For secondary data, the researcher will take the aid of various books, newspapers, research journals, databases of Government, published reports of organizations and annual reports of colleges and universities.

ANALYSIS AND INTERPRETATION

Shows the MEAN & SD for the factors of employability skills perceived by Engineering student at Coimbatore

Factors	N	Mean	SD	Median
Stress Coping	500	24.12	4.96	23
Communication Skills	500	17.05	4.02	19
Leadership Skills	500	15.80	3.92	17
Team work & problem solving	500	20.22	4.2	22
Time management	500	11.82	3.04	13
Self-Efficacy	500	16.80	4.76	18

FINDINGS OF THE STUDY

From the above theoretical point of view, the following results were drawn:

1. The obtained mean value of 24.12 with S.D of 4.96 for the factor of “Stress Coping” indicates that the obtained value is higher than the “cut off” value of median score 23. This value indicates that the groups of Engineering students are facing more stress in their academic demands and they need coping mechanisms to minimize their stress levels.
2. The obtained mean value of 17.05 with S.D of 4.02 for the factor of “communication skills” indicates that the obtained value is “lesser” than the “cutoff” value of median 19.0. This value indicates that the students of Engineering domain need more of “communication skills” in order to get their employability skills.
3. The obtained mean value of 15.80 with S.D of 3.92 for the factor of “leadership skills” indicates that the obtained value is “lesser” than the “cut off” value of median of 17.0 in the study. This value infers that the students of Engineering are in need of more information and skills on leadership qualities, in turn, it would help to develop their personality and pave way for their employability.
4. The obtained mean value of 20.22 with S.D of 4.21 for the factor of “team work and problem solving” indicates that the obtained value is “lesser” than the “cut off” value of the median 22.0 in the study. The value indicates that the students of Engineering domain need to learn more on “Team related work” and it would help them to solve different kinds of problems at work in future.

5. The obtained mean value of 11.82 with S.D of 3.04 for the factor of “Time Management” indicates that the obtained value is “lesser” than the “cut off” value of the median 13.0 in the study. This value indicates that students of Engineering domain are to be trained on the skills of Time management as it is one of the important components of employability skills.

6. Finally the obtained mean value of 16.80 with S.D of 4.76 for the factor of “Self-Efficacy” indicates that the obtained value is “lesser” than the “cut off” value of the median 18.0 in the study. This value indicates that students of Engineering domain need to improve on their personal effectiveness in order to get the job in future.

CONCLUSION

Today's engineers need to be inculcated with the soft skills such as team building, time management, leadership, motivation, flexibility and work ethics and etiquettes along with their English language efficiency. But unfortunately, today's current curriculum of engineering does not focus or give much priority to soft skills and communication skills development as compared to the technical skills. Thus, there is great urge today for the engineering institutions and the universities to bring out desired changes in the present syllabus pattern to enhance students' skills to make them a perfect fit in the global corporate competitions.

As industries and many of the MNCs play crucial performers in the campus recruitment process hence they should be taken into consideration while framing the syllabus. To gear up engineering pupils in the battlefield of the corporate world it is very much essential to design the framework of engineering as per industry needs. As “change” is important and unavoidable to grow similarly the “curriculum change” is also very important and timely. Today's education pattern needs to adapt the changes and demands of rapidly changing corporate world so that education system will be able to produce a not just a better leader or manager but a better human being.

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A STUDY ON AWARENESS ON PREMENSTRUAL SYNDROME AND MENSTRUAL HYGIENE PRACTICES OF MARRIED RURAL WOMEN IN THANJAVUR DISTRICT

Miss. M.Vinotha

M.A., M.Phil PhD Research Scholar (FT) , Department of Economics, Rajah Serfoji Government Colleges(Auto),Thanjavur-5

Dr.C.Sunitha.

M.A.,MBA.,M.Phil.,Ph.D.,B.Ed.,PGDM.,PGDE.,

Head and Associate Professor of Economics, Member Secretary-Academic Council, Rajah Serfoji Government Colleges (Auto), Thanjavur-5 Email Id:

ABSTRACT

Pre Menstrual Syndrome (PMS) refers to physical and emotional symptoms that occur in the one to two weeks before a woman's period. Symptoms often vary between women and resolve around the start of bleeding. Common symptoms include acne, tender breasts, bloating, feeling tired, irritability, and mood changes. Obesity and smoking are the risk factors for PMS. PMS affects women with ovulatory cycles. The exact causes of PMS are not known. Changes in brain hormone levels may play a role. However, this has not been proven women with PMS may also respond differently to these hormones. PMS may be related to social, culture, biological and psychological factors. There is no single test to diagnose PMS it is a clinical diagnosis which is the made by discussing concern with doctor. Treatment of PMS has in the past included diuretics, tranquilizers, dietary changes, aerobic exercise, psychiatric counseling, thyroid supplements, herbs, acupuncture, and vitamin and minerals supplements. First of all, stress a symptom journal for menstruation cycle. Compare symptoms to the information above and find out which hormones are probable out of balance. Secondly, hormone levels were tested by using a saliva test to determine the severity of imbalance so as to ensure a smooth transition through monthly menstruation. This study analysed the extent of PMS borne by the rural women in Thanjavur district.

Key word: premenstrual syndrome, Awareness, Symptoms, Treatment.

INTRODUCTION

Health is a state of physical, mental and social well – being it involves more than just the absence of disease. “A healthy body is a guest chamber for the soul; a sick body is a prison,” if we were to quote Bacon. A truly healthy person not only feels good physically but has a positive outlook on life and gets along well with others. Good health enables us to enjoy life and achieve the goals we have set for ourselves. To achieve and maintain good health, it is necessary to have some basic knowledge about the human body and its functions. Only then can we determine what will help in production our health. Current knowledge about health, together with good living habits, can help maintain good health and improve the quality of life.

Each and every part of our body must function properly to maintain good physical health. A person is sound physical condition has the strength and energy to enjoy an active

life and with stand the strains and stresses of daily existence. Proper nutrition, exercise, rest and sleep, clean lines, medical and dental care are all essential parts of healthy living physical health plays is closely associated with mental health. Mental health plays on important role in both the way people behave and the way they feel. Both these together constitute a part and parcel of good living.

Women is the stronger sex perhaps because every women has to go through certain milestones: puberty, childbirth, menopause etc. and all these can be tackled easily if one is aware of the scientific facts and problems pertaining to then most women sail through these milestones. Some with stress and underlying fear.(Paul R.Sheth)

Menstrual disorders:

Every girl and women does not necessarily feel miserable before her period. And yet, as many as 75 percent experience some premenstrual tension, such as bloating, abdominal heaviness fatigue and breast tenderness more than the physical ailments, an increase in emotional reactivity and the 'blue' mood is distressing. About 3 to 7 percent of women in their 20s and 30s suffer from a severe form of PMS known as premenstrual dysphoric disorder, sometime after a pregnancy or going of the contraceptive pill suspect that PMDD is caused by hormonal changes that occur just before menstruation. Progesterone with rises premenstrual has depressive effects; through women with PMS do not have high level of this hormone. PMS and mood swings can be alleviated by exercising regularly. Disorder of the female reproductive system frequently involves menstrual dysfunction. Excessive or scanty bleeding and spoiling before period are some of common menstrual problems if as women have never menstruated, right from the time of puberty, the conditions are called primary amenorrhea. (Parul R. Sheth)

Premenstrual syndrome

Premenstrual syndrome (PMS) refers to physical and emotional symptoms that occur in the one to two weeks before a woman's period. Symptoms often vary between women and resolve around the start of bleeding. Common symptoms include acne, tender breasts, bloating, feeling tired, irritability, and mood changes. Often symptoms are present for around six days. A woman's pattern of symptoms may change over time. Symptoms do not occur during pregnancy or following menopause. (Wikipedia)Pre Menstrual Dysphoric Disorder (PMDD) is the severe form of premenstrual syndrome (PMS).

The psychological symptoms are irritability, emotional liability, anxiety, and depression. Somatic symptoms include edema, weight gain, mastalgia, headache, syncope, and paresthesia. They appear about 1 week before the onset of menses and disappear soon after onset of menses. (IJP)

Risk factor of premenstrual syndrome:

Obesity and smoking are the risk factors for PMS. Reveals that women with a Body Mass Index 30 kg/m² or above are nearly three times as likely to have PMS are women who are not obese. Women who smoke cigarettes are likely to have more several PMS symptoms. PMS affects women with ovulatory cycles. Older adolescents tent to have more several

symptoms than younger adolescents do women in their fourth decade of life tend to be affected most severely PMS completely resolves at menopause.

Other factors in premenstrual syndrome:

While it is likely that a hormone imbalance directly or indirectly caused by progesterone deficiency is the major factor in the majority of PMS cases, there may also be there factors that deserve attention, especially in those cases that do not find complete relief with progesterone treatment. Nutrition plays a role. Recently identified xenoestrogens may also play a role in hormone imbalance.

Stress is a well – known cause of menstrual irregularity. Many women experience PMS for the first time after going off contraceptive pills, suggesting that synthetic hormone use and the prevention of normal ovulation may leave one's ovaries less able toing and treating PMS, and yet the problem of normalizing hormone balance remains a key factors in prober treatment. The essential amino acid tryptophan is well known as a safe calming agent and has been reported to be of benefit in patients with PMS.

Clinicians skilled in homeopathy have their share of success in treating PMS. Since PMS is such a complex issue with potentially different causes, meager understanding of it requires further research. The technique of doing accurate, sensitive, salivary hormone assays has been improved upon and is now available for general use. (John R.Lee)

Types of premenstrual syndrome:

There are five categories, however it experience PMS on a regular basic likely recognize symptoms from multiple categories and can fluctuate between dominating types from month to month.

PMS-A: Anxiety (High estrogen, low progesterone)

The most common type, this affects 70% of PMS sufferers. Symptoms include anxiety, irritability and emotional instability.

PMS-C: Cravings (High insulin during first half of cycle)

Affecting 30% PMS sufferers, symptoms include cravings for crabs & sweets and an insatiable appetite, heart palpitations, headaches, fatigue and fainting. This sounds like hypoglycemia.

PMS-D: Depression (low estrogen, possible low serotonin)

Only 30% of PMS sufferers experience this, but it is commonly associated with PMS-A symptoms include depression, crying and confusion.

PMS-H: Hyper- hydration

70 percent of PMS sufferers experience this symptom; include slight weight gain, bloating, swelling of the face, hands and ankles and breast tenderness.

PMS-P: Pain (High pro – inflammatory prostaglandin activity)

Simply put, these affected by PMS P or dysmenorrhea, feel pain in the form of cramps either leading up to or during the days of their menstruation.

OBJECTIVE OF THE STUDY

- To assess the Level of Awareness about the symptoms, diagnosis, treatment and source of information about Pre Menstrual Syndrome (PMS) among rural married women.
- To study about the relationship between socioeconomic factors and awareness about the premenstrual syndrome among rural women.
- To study about the Menstrual Hygiene practices followed by the rural women in Thanjavur District.

METHODOLOGY

The Thanjavur District in Tamilnadu is taken as the area for the present study. It is one of the biggest districts in Tamilnadu state with an area of 3,396.5 square km. it is on the east cost of Tamilnadu. Basically it is on agriculture district. Thanjavur District is divided into three revenue sub division namely Thanjavur, Pattukkottai, and Kumbakonam. During the formation of a separate district Thanjavur district was constituted with 15 Development blocks. Presently the district has only 14 administrative blocks and 51ward in Thanjavr. Using sampling technique 250 married women respondents was selected. Only the married rural women respondent those who were above the age of 18 visiting the health center for both medical or non-medical reason during the three months March to May 2019 were considered for study and data was collected using a validate questionnaire.

REVIEW OF LITERATURE

Bumbuliene Z. (2003) menstrual disorders are very common during the early post menarcheal years. This study was undertaken to determine the causes of menstrual disorders in adolescents. It included 117 girls 14-18 years old without evidence of androgen excess : the study group consisted of 87 adolescents with menstrual disorders and the control group of 30 girls with regular menstrual cycles. All the patients underwent gynecological and ultrasound examination and an analysis of the hormonal status. A thorough history and physical examination focusing on the basic understanding of pubertal and menstrual physiology and pathology allows obtaining an accurate diagnosis. The prognosis for later fertility depends on the preventive measures taken in adolescence.

Freeman EW, and Sondheim SJ. (2003) premenstrual dysphonic disorder (PMDD) represents the more severe and disabling end of the spectrum of premenstrual syndrome and occurs in an estimated 2% to 9% of menstruating women. The most frequent PMDD symptoms among women seeking treatment consist of irritability, anxiety, feeling tired or lethargic, mood swings, feeling sad or depressed, and increased interpersonal conflicts. Women who develop PMDD appear to have serotonergic dysregulation that may be triggered by cyclic changes in gonadal steroids.

McEvoy M, et.al. (2004) menstrual disorders such as amenorrhea, excessive uterine bleeding, dysmenorrheal, and premenstrual syndrome are common reasons for visits to healthcare providers by adolescent girls. Although menstrual irregularity can be normal

during the first few years after menarche, other menstrual signs and symptoms may indicate a pathological condition that requires prompt attention and referral. It discussed four common menstrual disorders seen in adolescent girls and focuses on specific nursing interventions aimed at eliciting an accurate menstrual history, providing confidentiality and communicating therapeutically, administering culturally sensitive care, and promoting independence and self-care.

Indusekhar R, et.al. (2006) stated that premenstrual syndrome (PMS) is a group of psychological and physical symptoms which regularly occur during the luteal phase of the menstrual cycle and resolve by the end of menstruation. PMS results from ovulation and appears to be caused by the progesterone produced following ovulation in women who have enhanced sensitivity to this progesterone. The increased sensitivity may be due to neurotransmitter dysfunction. The key diagnostic feature is that the symptoms must be absent in the time between the end of menstruation and ovulation. Treatment is achieved by suppression of ovulation or reducing progesterone sensitivity with selective serotonin re-uptake inhibitors.

Yonkers KA, et.al., (2008) most women of reproductive age have some physical discomfort or dysphoria in the weeks before menstruation. Symptoms are often mild, but can be severe enough to substantially affect daily activities. About 5-8% of women thus suffer from severe premenstrual syndrome (PMS); most of these women also meet criteria for premenstrual dysphoric disorder (PMDD). Mood and behavioral symptoms, including irritability, tension, depressed mood, tearfulness, and mood swings, are the most distressing, but somatic complaints, such as breast tenderness and bloating, can also be problematic. causes of severe PMS, and describe two main methods of treating it: one targeting the hypothalamus pituitary ovary axis, and the other targeting brain serotonergic synapses.

Rapkin AJ, and Winer SA. (2009) premenstrual symptoms are distressing for up to 20% of reproductive aged women and are associated with impairment in interpersonal or workplace functioning for at least 3-8%. Typical symptoms of premenstrual syndrome and the severe form, Premenstrual Dysphoric Disorder, include irritability, anger, mood swings, depression, anxiety, abdominal bloating, breast pain and fatigue. The symptoms recur monthly and last for an average of 6 days per month for the majority of the reproductive years. It has been estimated that affected women experience almost 3000 days of severe symptoms during the reproductive years.

DATA ANALYSIS

Overall Awareness about Premenstrual Syndrome

Questioned about the general awareness regarding premenstrual syndrome, half of the respondents revealed that they are not at all aware same. In the mostly available source of the information in the village primary health center workers, Government hospital workers and area staff nurse from 39 % of the respondents gained the knowledge of premenstrual syndrome. While the media account for 10 % awareness the society consists of the family, relative and friends. Media is the easy way to convey of Awareness among rural women. The majority of rural women got awareness from staff nurse and PHC workers of their area.

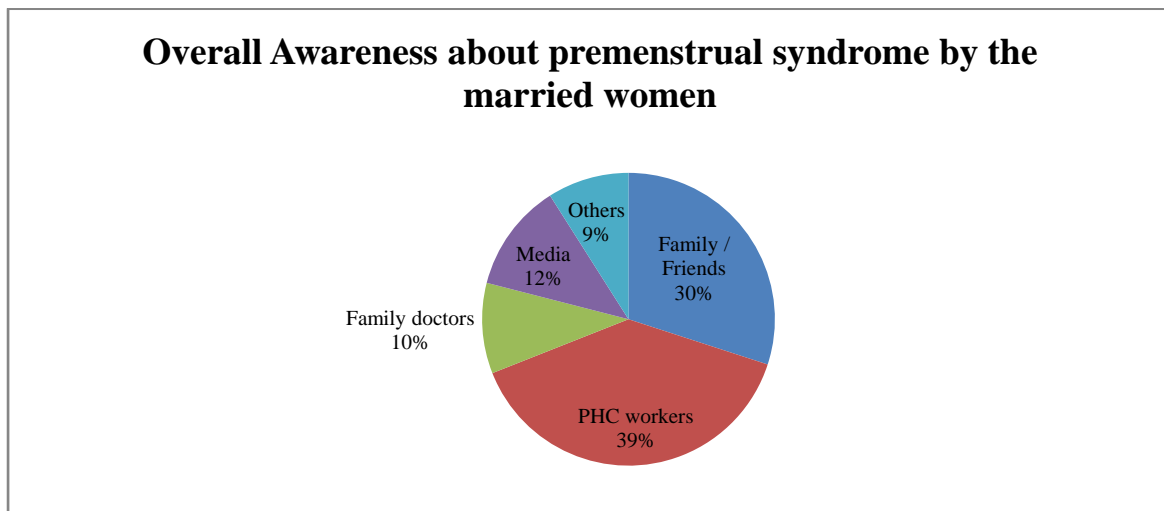
Table No: 1

Overall Awareness about Pre Menstrual Syndrome by the Rural Married Women

S.No	Whether Aware of Premenstrual syndrome	No of respondents	Percentage
1	Yes	161	64
2	No	89	36
	Total	250	100
If yes the source of information (multiple answers)			
1	Family / Friends/ Relatives	49	30
2	PHC workers/ Area staff Nurse	61	39
3	Family doctors/ Gynecologists	16	10
4	Media	20	12
5	Other source	15	09
	Total	161	100

Source: Primary data

Chart No:1



Source : primary data.

Relationship between Socio Economic Factors and Awareness

The study analyzed whether various socio-economic demographic variables have any statistically significant relationship with the awareness of premenstrual syndrome. The economic condition and standard of living is connected with level of awareness. High Economic condition increases the level of awareness about the premenstrual syndrome. A similar relationship is witnessed between occupation status of women and awareness level. Thirty six percent of rural women occupied agriculture as their job and their awareness is low. Twenty one percent women education level is primary level and also higher secondary education level is twenty one percent.

Table No:2 Relationship between Socio Economic Factors and Pre Menstrual Syndrome Awareness

Variables	Category	Awareness in no of respondents			Awareness in % of respondents		
		Aware	Not aware	Total	Aware	Not aware	Total
Age in years	Above 18 years	35	17	52	14%	07%	21%
	21 – 30 years	43	10	53	17%	04%	21%
	31-40	31	19	50	12%	08%	20%
	41 – 50	25	22	47	10%	09%	19%
	Above 50	27	21	48	11%	08%	19%
	Total	161	89	250	64%	36%	100%
Religion	Hindu	111	49	160	44%	20%	64%
	Christian	38	32	70	15%	13%	28%
	Muslim	12	08	20	05%	03%	08%
	Total	161	89	250	64%	36%	100%
Cast	BC	37	12	49	15%	05%	20%
	MBC	47	28	75	19%	11%	30%
	SC/ST	65	41	106	26%	16%	42%
	Others	12	08	20	05%	03%	08%
	Total	161	89	250	64%	36%	100%
Education	Primary level	44	29	73	18%	12%	29%
	Secondary level	26	21	47	10%	08%	19%
	Higher secondary level	42	11	53	17%	04%	21%
	Degrees	31	18	49	12%	07%	20%
	Others	18	10	28	07%	04%	11%
Total	161	89	250	64%	36%	100%	
Marital Status	Married	107	52	159	43%	21%	64%
	Unmarried	16	19	35	06%	08%	14%
	Widows / others	38	18	56	15%	07%	22%
	Total	161	89	250	64%	36%	100%
No of children	0	27	21	48	11%	08%	19%
	1	43	13	56	17%	05%	22%
	2	55	28	84	22%	11%	33%
	3	16	21	36	06%	08%	14%
	More than 3	20	06	25	08%	02%	10%
	Total	161	89	250	64%	36%	100%
Occupation	House wife	41	22	63	16%	09%	25%
	Agriculture worker	54	34	88	22%	14%	35%
	Government job	28	12	40	11%	05%	16%
	Private job	21	11	32	08%	04%	13%
	Self / Other work	17	10	27	07%	04%	11%
	Total	161	89	250	64%	36%	100%
Type of house	Own house	138	62	200	55%	25%	80%
	Rent house	23	27	50	09%	11%	20%
	Total	161	89	250	64%	36%	100%
Type of family	Nuclear	124	63	187	50%	25%	75%

	Joint family	37	26	63	15%	10%	25%
	Total	161	89	250	64%	36%	100%
Yearly family income	Less than 50000	57	32	89	23%	13%	36%
	50001 – 100000	40	24	64	16%	10v	26%
	100001 – 150000	42	21	63	17%	08%	25%
	More than 150000	22	12	34	09%	05%	14%
	Total	161	89	250	64%	36%	100%

Source: primary data

Awareness regarding Premenstrual Syndrome Symptoms:

The list of potential signs and symptoms for premenstrual syndrome is long, but most women only experience a few of these problems. Emotional and behavioral signs and symptoms: Tension or anxiety, Depressed mood, Crying spells, Mood swings and irritability or anger, Appetite changes and food cravings, Trouble falling asleep, Social withdrawal, Poor concentration, Change in libido.

Physical signs and symptoms : Joint or muscle pain, Headache, Fatigue, Weight gain related to fluid retention, Abdominal bloating, Breast tenderness, Acne flare-ups, Constipation or diarrhea, Alcohol intolerance. PMDD signs and symptoms include depression, mood swings, anger, anxiety, feeling overwhelmed, difficulty concentrating, irritability and tension. Forty three percent of women respondent are having a fully aware about symptoms of premenstrual syndrome.

Table No: 5

Awareness about the various symptoms of PMS

S.No	Do you know about the various symptoms	No of respondents	Percentages
1	Yes	122	76%
2	No	39	24%
	Total	161	100%
If yes, level of awareness			
1	Fully aware	52	43%
2	Highly Aware	32	26%
3	Normal/ Moderate	25	20%
4	Low level of awareness	13	11%
	Total	122	100%

Source: primary data

Premenstrual Syndrome Causes Awareness:

The exact causes of PMS is not known. Changes in brain hormone levels may play a role. However, this has not been proven women with PMS may also respond differently to these hormones. PMS may be related to social, culture, biological and psychological factors. Most women experience PMS symptoms during their child bearing years. PMS occurs more often in women.

- Between their late 20s and 40s.

- Who have had at least one child
- With a personal or family history of major depression.
- With a history of postpartum depression or an affective mood disorders.(Medlineplus). Forty one percent of respondent or having a normal awareness about Premenstrual syndrome cases.

Table No: 4**Awareness about the causes of premenstrual syndrome**

S.No	Do you know about the causes of premenstrual syndrome	No of respondents	Percentages
1	Yes	98	60%
2	No	63	40%
	Total	161	100%
If yes, causes			
1	Fully aware	14	14%
2	Highly Aware	21	22%
3	Normal/ Moderate awareness	40	41%
4	Low level of awareness	22	23%
	Total	97	100%

Source: primary data

Awareness about Premenstrual Syndrome Diagnosis:

There is no single test to diagnose PMS it is a clinical diagnosis which is the made by discussing concern with doctor. However there is some strategies doctor use to help diagnose PMS. PMS Symptoms diary – doctor ask to keep a diary to assess the frequency and severity of symptom doing this, can see it symptoms correspond to certain times in monthly cycle. While symptoms vary from month to month, a trend likely will appear after tracking symptoms for few months. Some time women are surprise to find that the symptoms do not seem to vary with the fluctuation of their hormonal cycles. Women who have many of the emotional symptoms throughout the month actually suffer from depression and anxiety making a correct diagnosis is the most important first step towards feeling better.

Thyroid testing- Because thyroid disorders are common in women of childbearing age and some of the symptoms of PMS – such as weight gain, depression, fatigue are similar to symptoms of thyroid disorders, doctor order a test to evaluate thyroid function. This can help to rule out a thyroid disorder as a cause of symptoms. Forty four percent of rural area women respondent are having normal awareness about premenstrual syndrome diagnosis in the study area.

Table No:5**Awareness about Diagnosis of Pre Menstrual Syndrome**

S.No	Do you know about the diagnosis methods	No of respondents	Percentages
1	Yes	93	58%
2	No	68	42%
	Total	161	100%
If yes, causes			
1	Fully aware	20	22%
2	Highly Aware	13	14%
3	Normal/ Moderate awareness	41	44%
4	Low level of awareness	19	20%
	Total	93	100%

Source: Primary data

Awareness about Premenstrual Syndrome Treatment:

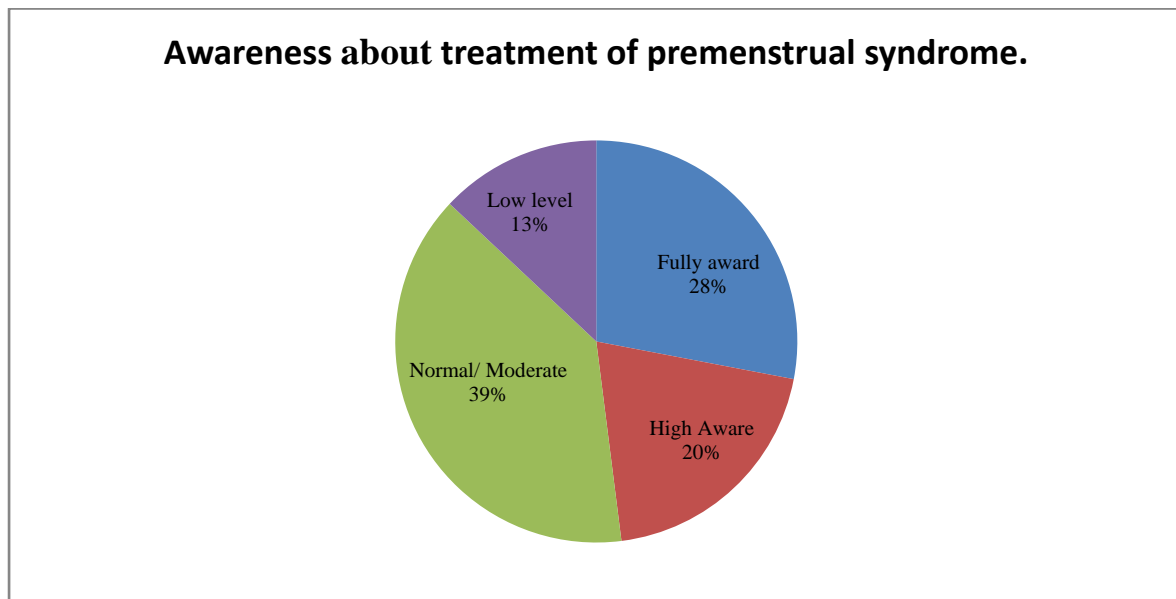
Treatment of PMS has in the past included diuretics, tranquilizers, dietary changes, aerobic exercise, psychiatric counseling, thyroid supplements, herbs, acupuncture, and vitamin and minerals supplements. Which each many provide some relief, none has proved to be a panacea. B complex vitamins, calcium and pain relieving medicines help to some extent. Walking is often one of the best thing to relive it. Thirty nine percent of rural women respondents are having normal level of premenstrual syndrome treatment awareness.

Table No: 6**Awareness about Treatment of Pre Menstrual Syndrome**

S.No	Do you know about the treatment of Pre Menstrual syndrome	No of respondents	Percentages
1	Yes	118	73%
2	No	43	27%
	Total	161	100%
If yes, symptoms			
1	Fully aware	33	28%
2	High Aware	24	20%
3	Normal/ Moderate	46	39%
4	Low level of awareness	15	13%
	Total	118	100%

Source: primary data

Chart No:2



Source: Primary data

Managing Premenstrual Syndrome :

First of all, stress a symptom journal for menstruation cycle. Compare symptoms to the information above and find out which hormones are probable out of balance. Secondly, have hormone levels tested using a saliva test to determine the severity of imbalance. Lastly following these simple steps to ensure a smooth transition through monthly menstruation.

- Avoid alcohol, sugar, caffeine, dairy, salt and processed or fast foods instead, try herbal tea, natural sweeteners like raw honey, nut milk and try to stick on to home cooked meals.
- Chow down on nutrient – dense, high protein snacks like veggies and hummus or chia seed pudding between meals to avoid cravings.
- Try seed cycling, which entails eating specific seeds during different section of cycle to regulate estrogen and progesterone levels

Hormones are often a direct reflection of other things going on in body. Be mindful to keep hygiene into the organs that will support hormone production, release and detoxification, including adrenal and reproductive glands, as well as.

CONCLUSION:

Women with PMS can go for the excellent tests of salivary hormone levels which are available and may help in elucidating the factors underlying their condition. PMS itself cannot be prevented, but through education and appropriate treatment of symptoms, most women can find relief. A healthy life style including exercise and a proper diet also can help a women better manage the symptoms of PMS. Those who felt significantly affected by PMS were suggested to consult doctors immediately as it may be Premenstrual Dysphoric Disorder (PMDD) which is a more severe form of PMS, which needs immediate care.

Government and Private organization can conduct more awareness programs and help to improve the awareness about Premenstrual Syndrome among women especially rural women.

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“AN EFFECTIVE TOOL FOR BANNING PLASTIC BAGS FOR ECO FRIENDLY ENVIRONMENT: GREEN MARKETING”

Dr. Monisha, Asso. Prof.

Tecnia Institute of Advanced Studies, GGSIPU., New Delhi

Abstract-

Green marketing is the marketing of those products which are environmental friendly. These products are easily available in the market still they are not very popular. The study is based on one of the green products i. e. jute bags. The study emphasizes the use of jute bags instead of polythene bags. It is a well-known fact that jute bags are durable, re-usable and are biodegradable still all the consumers do not use them. They still like polythene because it is cheap and convenient to carry. Although the consumers are aware about the harmful effects of polythene still they are using it. The study is based on finding out the reasons why consumers do not want to use jute bags instead of knowing harmful effects of polythene and why the companies are not encouraged to produce more green products. Some suggestions have also been given which can be used to encourage consumers to use jute bags.

Key Words-Green products, green marketing, polythene bags, jute bag etc.

Introduction-A green product is the one which is environmental friendly. An environmental friendly product is one that is not harmful. Green products are eco friendly and meet the needs of the people. These products do not create any harmful effects either to the environment or to the people using them.

Green marketing

Green marketing is also termed as Environmental marketing, Ecological marketing, Sustainable marketing etc. Green marketing involves selling those products in the market which are environmentally safe.

According to Pearson Education, (accessed 2010) "Green marketing means to integrate business practices and products that are friendly to the environment while also meeting the needs of the consumers"

Thus, green marketing means producing and promoting environmental friendly products. For example napkins and bags made of recycled paper are green products.¹

Literature Review

Evolution of green marketing

The green marketing has evolved over a period of time. The evolution of green marketing has three phases. First phase has been termed as "Ecological" green marketing, and during this period all marketing activities were concerned to help environmental problems and provide remedies for them. Second phase has been "Environmental" green marketing and the focus shifted on clean technology that involved designing of innovative new products, which take

care of pollution and waste issues. Third phase has been "Sustainable" green marketing. It came into prominence in the late 1990s and early 2000.²

“Sustainability contains a combination of social (e.g. human rights, equality, diversity) and environmental (e.g. waste, energy use, pollution) issues which are inevitably intertwined and connected. In a business context, sustainable marketing means the success of the business not just on financial performance, but on its environmental and social performance too.³

In short sustainable green marketing refers to the process of selling products based on their environmental benefits.

Advantages of Green Marketing

We know that resources are always limited while wants are unlimited. It is the need of today to utilize resources efficiently without causing any harm to the environment. Nowadays most of the consumers are aware about the green products and they are also willing to pay a little more if the product is meeting their requirements without causing any harm to the environment.⁴

Green marketing manipulates the four elements of the marketing mix (product, price, promotion, and distribution) to sell products and services offering superior environmental benefits in the form of reduced waste, increased energy efficiency and decreased release of toxic emissions.⁵

The companies have the following advantages for the adoption of green marketing. These are:

- Companies that produce green products have competitive advantage over those companies which do not produce green products.
- Companies fulfill their corporate social responsibility by producing green products.
- In some cases there is government pressure. Recent example is polythene. The government has put ban on the use of polythene. But unfortunately this has not been implemented properly.
- Green products also add to the profitability of a company.

Why all the companies are not adopting green marketing

If the companies want to market their products as "green", they require environmental certificates. These certifications are issued by governments, industry associations, trade associations and consumer advocacy groups. Getting this certificate is not easy. It is a lengthy and expensive process. The company has to fulfill certain standards for energy use, efficiency and recyclability. Further the company cannot charge higher price for green products.⁶

The green products are manufactured and packaged in an environmentally friendly way. In fact, the companies making green products have different method of getting raw material for production. Further packaging and distribution methods are also different than those of other companies which are not making green products.

The public tends to be skeptical of green claims to begin with and companies can seriously damage their brands and their sales if a green claim is discovered to be false or contradicted by a company's other products or practices.

There are certain difficulties in adopting green marketing, these are

- Green products require renewable and recyclable material, which is costly.
- Green products require a technology which requires huge investment in R and D.
- Green products require water treatment technology, which is costly.
- Some consumers are not willing to pay a premium for green products as they are not aware of the benefits of the green products.⁷

Polythene/plastic bags

Polythene bags are very popular as they are cheap, durable, water resistant and lightweight. They are very convenient to carry most of the items. There are different sizes of polythene available in the market that can carry sufficient weight. When polythene is provided by the shopkeepers, it becomes more convenient as there is no need to carry bags from home while going to market.

But unfortunately polythene bags are very harmful not only for the environment, but also for human beings. First of all they cannot be decomposed. It takes many years for a polythene bag to decompose. Plastic bags are almost not biodegradable, since they do not decompose during the time span of human lives. If they are thrown out, they litter the environment, keeps lying on parks, roads, streets etc, and sometimes block the waterways if enter into drains. On the other hand if they are burnt, they pollute the air with toxic fumes. If polythene breaks down, the harmful substances enter into the soil and enter the food chain. The production of plastic bags creates air pollution and energy consumption.⁸

Children can also suffocate due to plastic bags. That is why many polythene bags producers print voluntary suffocation warnings, such as "this bag is not a toy."⁹ Polythene bags eventually break down into small particles resembling plankton, one of the main animal food sources. Many animals swallow plastic bags mistaking them for food. The plastic wraps around their intestines. As a result, they suffer a painful death. Even after animals bodies decompose, the plastic bags stay intact, and another animal can get hurt.¹⁰

Jute Bags

India is the largest producer of jute in the world. Jute is natural fiber. Jute is a rain fed crop. Jute bags are ecological, durable, reusable, bio-degradable, environmental friendly and long lasting. Further, production of jute creates employment opportunities.

In fact jute bags are suitable for those who are conscious about the environment. Jute bags are easily available and give an image that the people using them are conscious about the environment. In spite of these benefits, many people believe that jute bags are costly and do not perform as per their expectations.

Advantages of Jute Bags are as follows:-

- Jute bags are eco friendly.
- Jute Bags are quite strong and can easily carry up to 15 kilograms compared to conventional carry bags. They are long lasting and can be subjected to rough use also. They also do not need regular washing. Jute Bags are reusable. They can be reused by customers for their future shopping.
- One of the most salient uses of the jute articles, especially jute shopping bags is as a promotional tool employed by various organization. Any kind of design, logo & imprint can be done. Jute Bags look very elegant with their natural golden color. They are also available in a wide range of colors.¹¹

Research Methodology: The study is based on survey method with the help of questionnaire.

Sources of Data Collection: For the purpose of research, both primary and secondary data have been collected.

Sources of Primary Data

Questionnaire Method- 100 samples of questionnaire were used.

Sources of Secondary Data

- Internet

Sampling: Convenience sampling has been used.

Sample Size: 100 questionnaires were distributed to professionals, students, housewives, businessman etc.

Tools Applied

- Descriptive analysis
 - Percentage analysis
- Area-** West Area of Delhi

Objectives:-The following are the objectives of the study.

- To find out the harmful effects of polythene
- To find out benefits of using jute bags.
- To find out the reasons why consumers are not using jute bags
- To find out why all companies do not produce green products
- To find out ways for making the marketing of green products more effective.

Limitations of the Study- The following are the limitations of the study.

- Convenience sampling has been used.
- Sample size is 100 only.
- Survey was conducted at few locations.

Analysis and Interpretation of Data

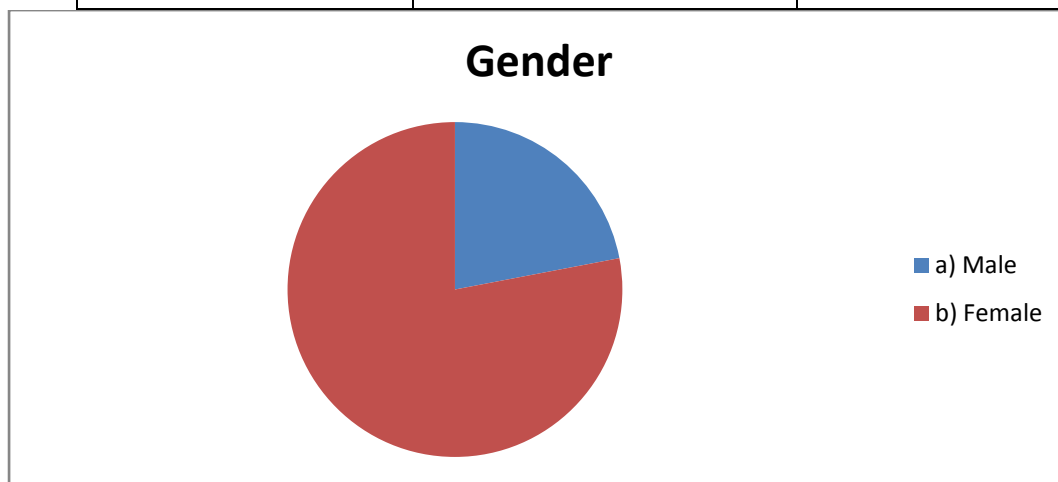
1) Gender

a) Male

b) Female

Table 1

Options	No. of respondents	Percentage
a) Male	22	22%
b) Female	78	78%



The survey was carried on 100 respondents out of whom 22% are male and 78% are female.

2) Profession

a) Business

b) Service

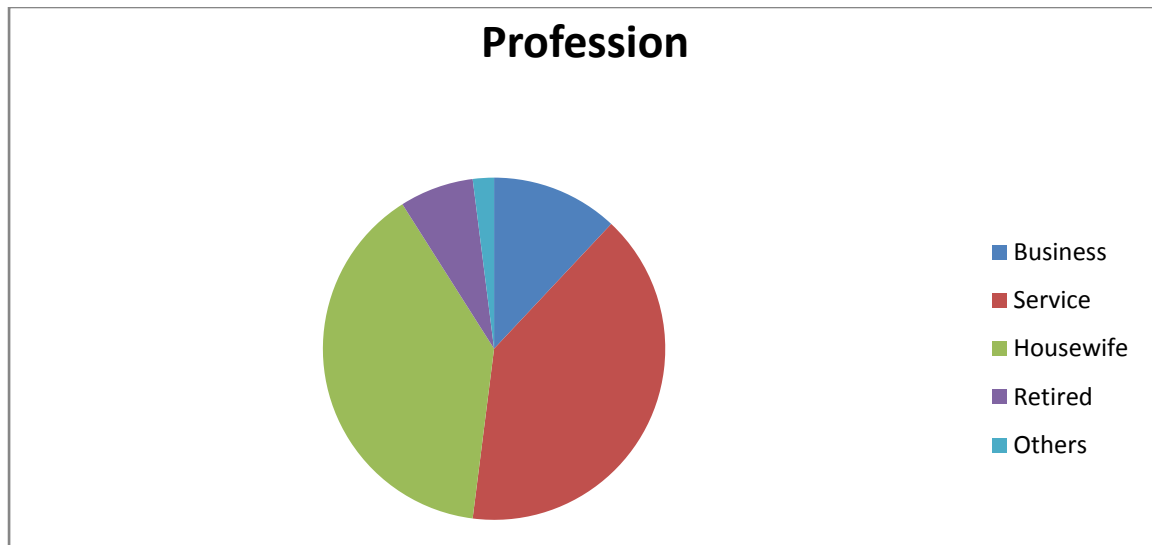
c) Housewife

d) Retired

e) Others

Table 2

Options	No. of respondents	Percentage
Business	12	12%
Service	40	40%
Housewife	39	39%
Retired	7	7%
Others	2	2%



The survey included 100 respondents. 12 respondents are in business, 40 respondents are in service. 39 respondents are housewives. Only 7 respondents are the retired while remaining 2 respondents do not belong to any of these categories.

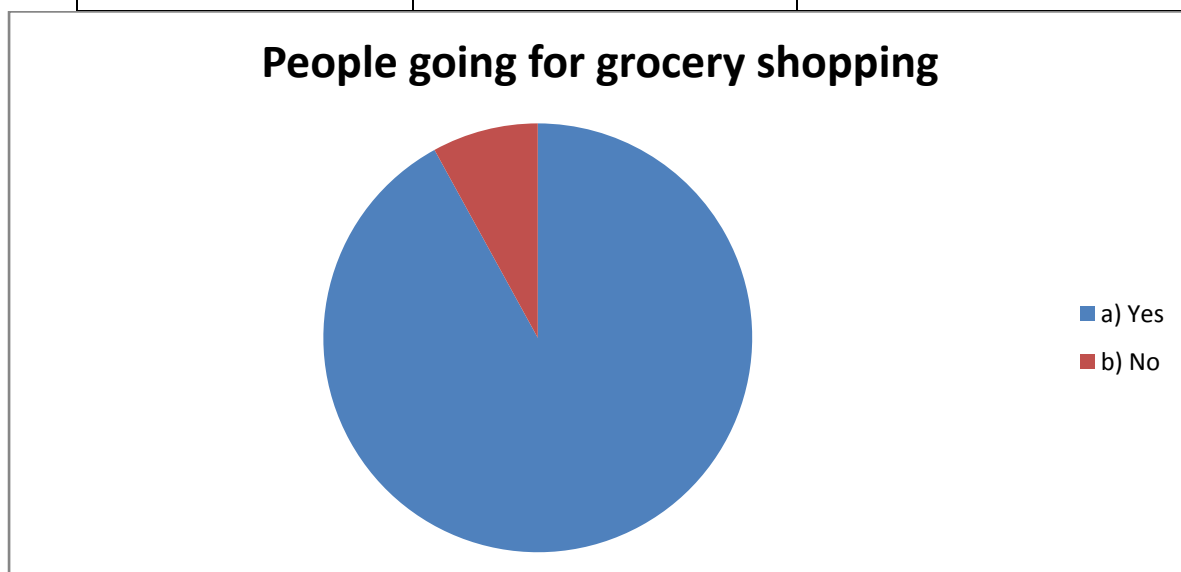
3) Do you go for grocery shopping?

a) Yes

b) No

Table 3

Options	No. of respondents	Percentage
a) Yes	92	92%
b) No	08	8%



Out of the 100 respondents, a majority of share that is 92 respondents go for shopping while 8 respondents do not go for shopping

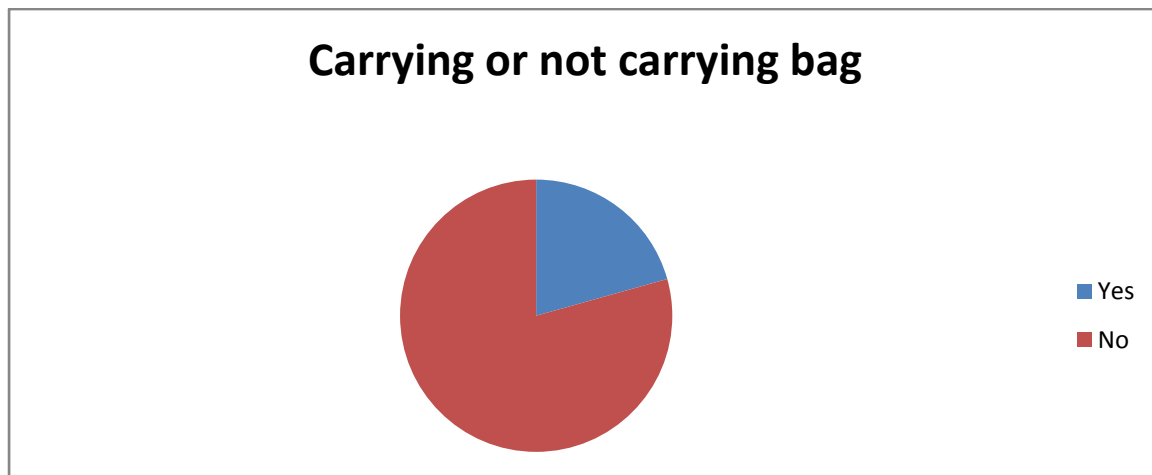
4) If yes, do you carry any bag while going for market?

a) Yes

b) No

Table 4

Options	No. of respondents	Percentage
a) Yes	19	20.65%
b) No	73	79.35%

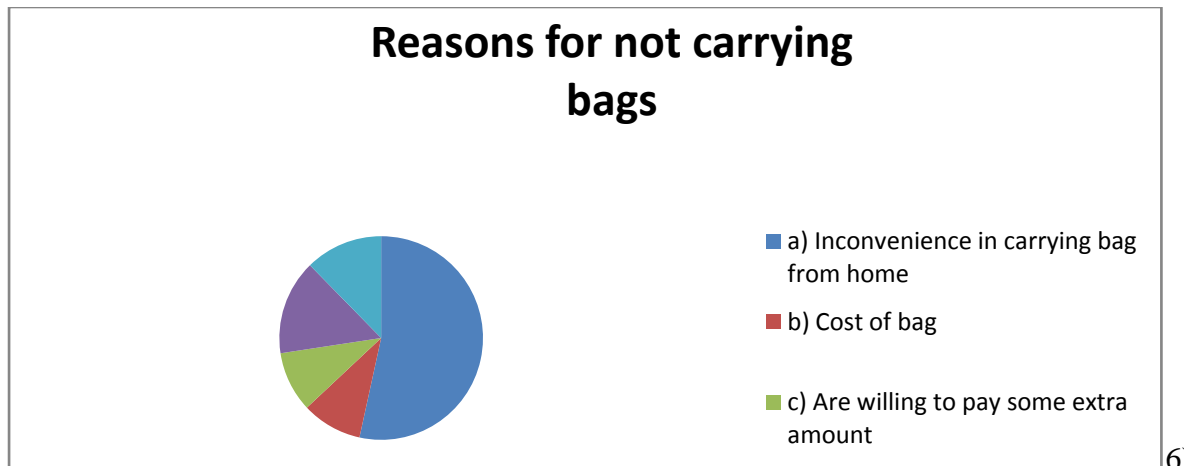


It is clear from the pie chart that only 19 respondents carry shopping bag while 73 respondents do not carry bags while going for shopping.

5) If no, what are the reasons?

Table 5

Options	No. of respondents	Percentage
a) Inconvenience in carrying bag from home	39	53.42%
b) Cost of bag	7	9.59%
c) Are willing to pay some extra amount to the shopkeeper for the bag.	7	9.59%
d) All of these	11	15.07%
e) Any other reason, please specify	9	12.33%



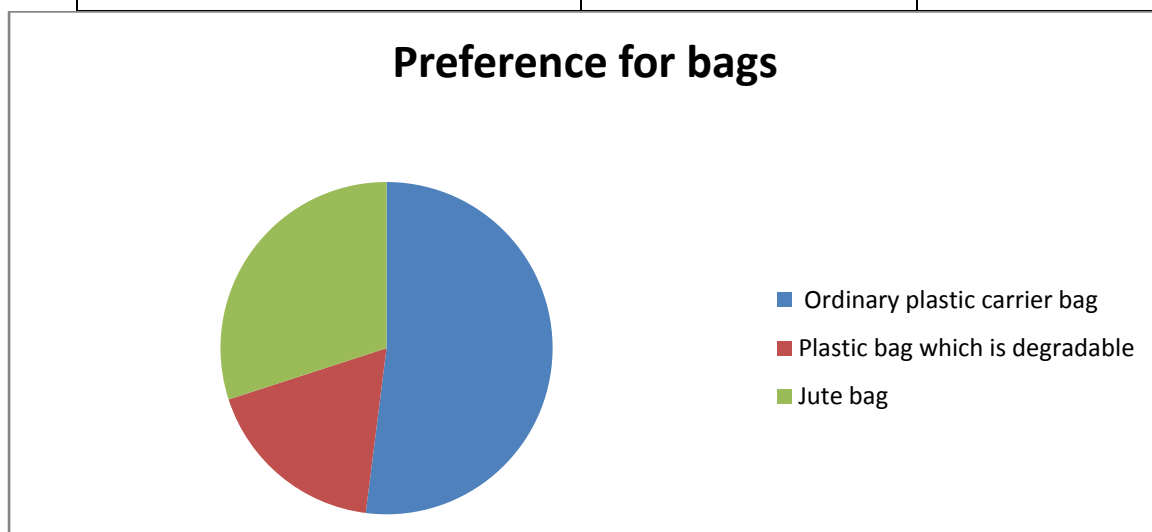
The chart shows that 39 respondents do not carry plastic bags because they feel inconvenience in carrying bag from home. According to 7 respondents the cost matters to them. 7 respondents are willing to pay some extra amount to the shopkeeper for the bag. 11 respondents tell all the three above mentioned reasons. Remaining 9 respondents specify other reasons for not carrying the bag likeburden of taking care of bag before shopping, saving money, etc.

6) Which bag do you prefer?

- a) Ordinary plastic carrier bag b) Plastic bag which is degradable c) Jute bag

Table 6

Options	No. of respondents	Percentage
a) Ordinary plastic carrier bag	52	52%
b) Plastic bag which is degradable	18	18%
c) Jute bag	30	30%



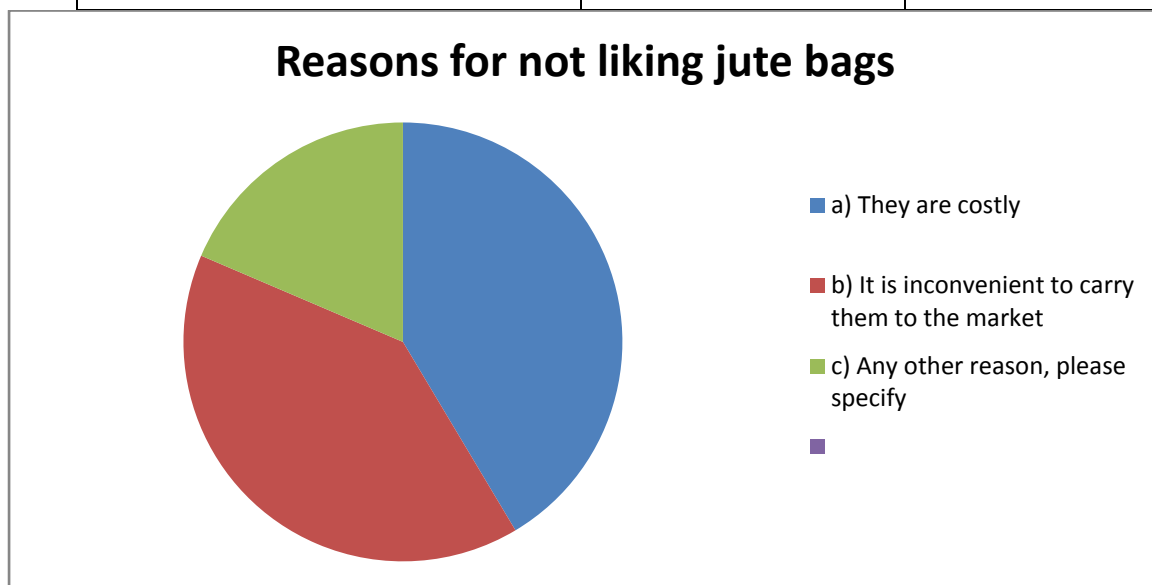
It is clear from the chart that 52 out of 92 respondents prefer ordinary plastic carrier bag, 18 out of 92 respondents prefer plastic bag which is degradable and remaining 30 respondents prefer jute bag.

7) If plastic bag, why you do not prefer jute bags?

- a) They are costly
- b) It is inconvenient to carry them to the market
- c) Any other reason, please specify _____

Table 7

Options	No. of respondents	Percentage
a) They are costly	29	41.43%
b) It is inconvenient to carry them to the market	28	40.00%
c) Any other reason, please specify	13	18.57%



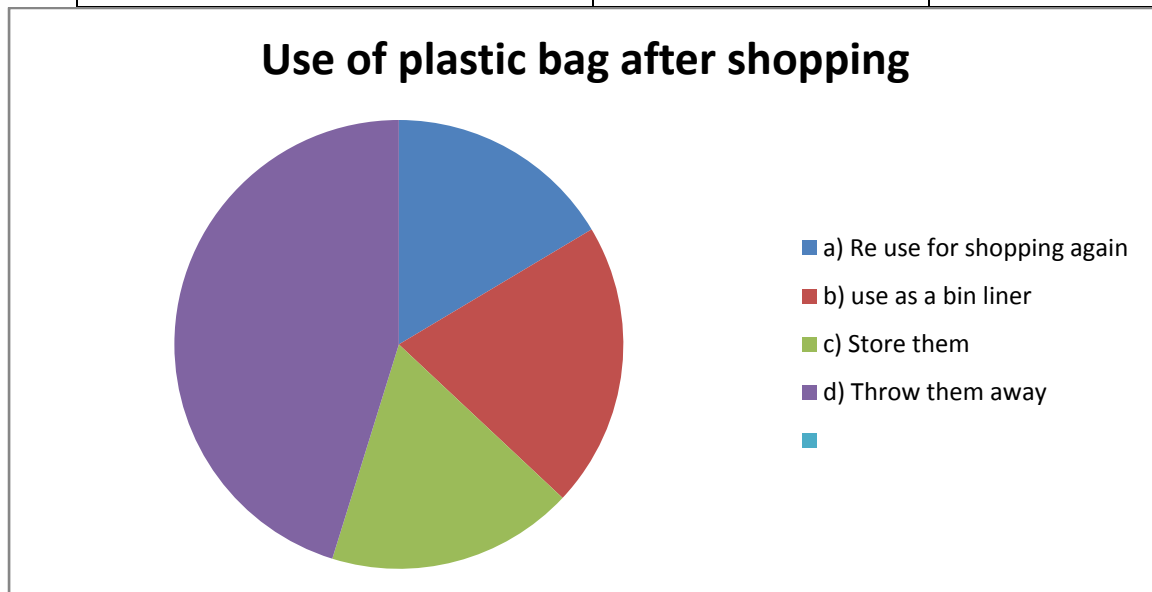
The chart shows that 29 respondents do not like jute bags as these are costly, 28 respondents do not like it as they feel it inconvenient to carry jute bag to the market while remaining 13 respondents say that plastic bags are cheap, lightweight and convenient to use.

8) If you use plastic bag, what do you do with your plastic bag after shopping?

- a) Re use for shopping again
- b) use as a bin liner
- c) Store them
- d) Throw them away

Table 8

Options	No. of respondents	Percentage
a) Re use for shopping again	12	16.44%
b) use as a bin liner	15	20.55%
c) Store them	13	17.81%
d) Throw them away	33	45.20%



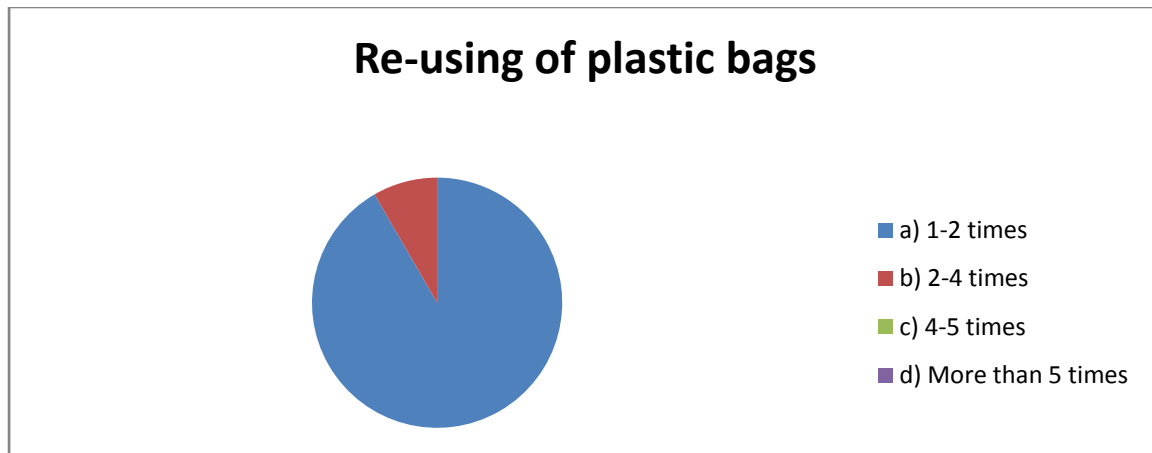
The chart shows how respondents re use plastic bags. 12 respondents out of 73 use the plastic bag for shopping again, 15 out of 73 respondents use it as a bin liner. 13 out of 73 store them for other purposes and remaining 33 throw them away. That's why they pollute the environment.

9) If you reuse it for shopping, how many times do you generally use it?

- a) 1-2 times b) 2-4 times c) 4-5 times d) More than 5 times

Table 9

Options	No. of respondents	Percentage
a) 1-2 times	11	91.67%
b) 2-4 times	1	8.33%
c) 4-5 times	0	0
d) More than 5 times	0	0



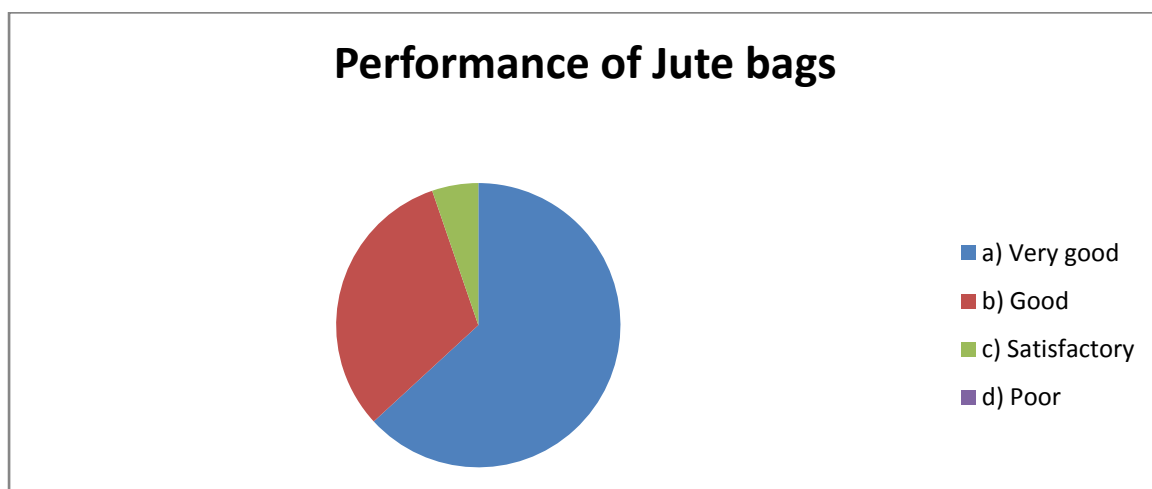
The chart shows how many times the respondents re use the bag. 11 out of 12 respondents use it 1-2 times while only 1 uses it 2-4 times. It means they throw it after re using it 1-2 or 2-4 times. This further pollutes the environment.

10) If you are using jute bags, how do you rate the performance of the jute bags?

- a) Very good b) Good c) Satisfactory d) Poor

Table 10

Options	No. of respondents	Percentage
a) Very good	12	63.16%
b) Good	6	31.58%
c) Satisfactory	1	5.26%
d) Poor	0	0



Performance of jute bag is good. 12 out of 19 respondents consider jute bag very good, 6 out of 13 consider it good and 1 out of 19 consider it satisfactory. None of the respondents say that the performance of jute bag is poor. This clearly shows the satisfaction level of respondents for jute bag.

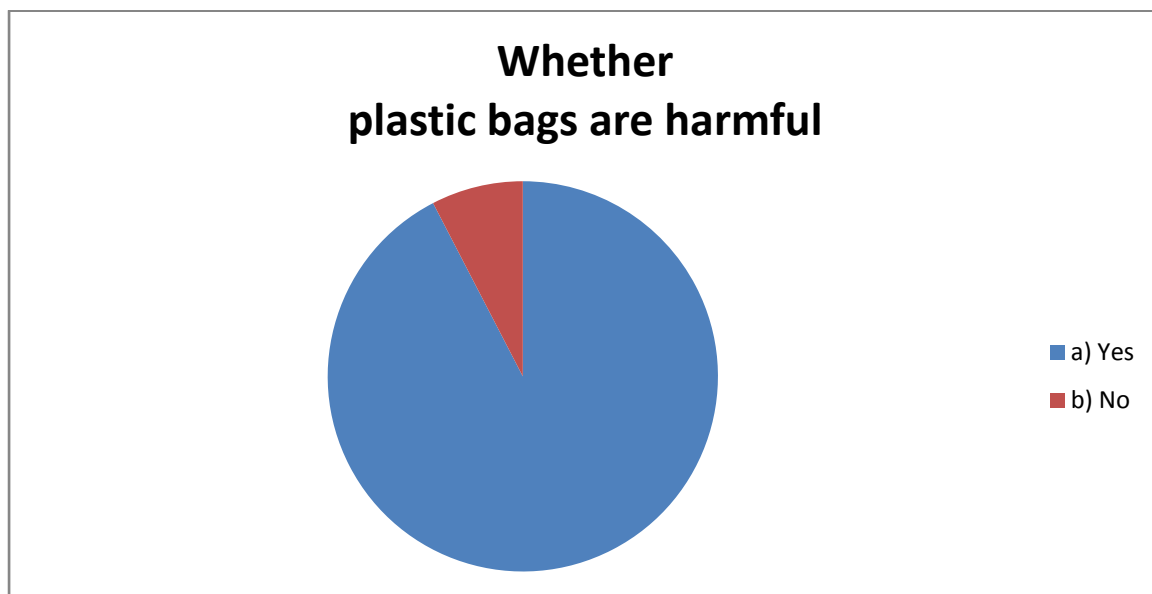
11) Do you know that plastic bags are harmful for the environment?

a) Yes

b) No

Table 11

Options	No. of respondents	Percentage
a) Yes	85	92.39%
b) No	7	7.61%

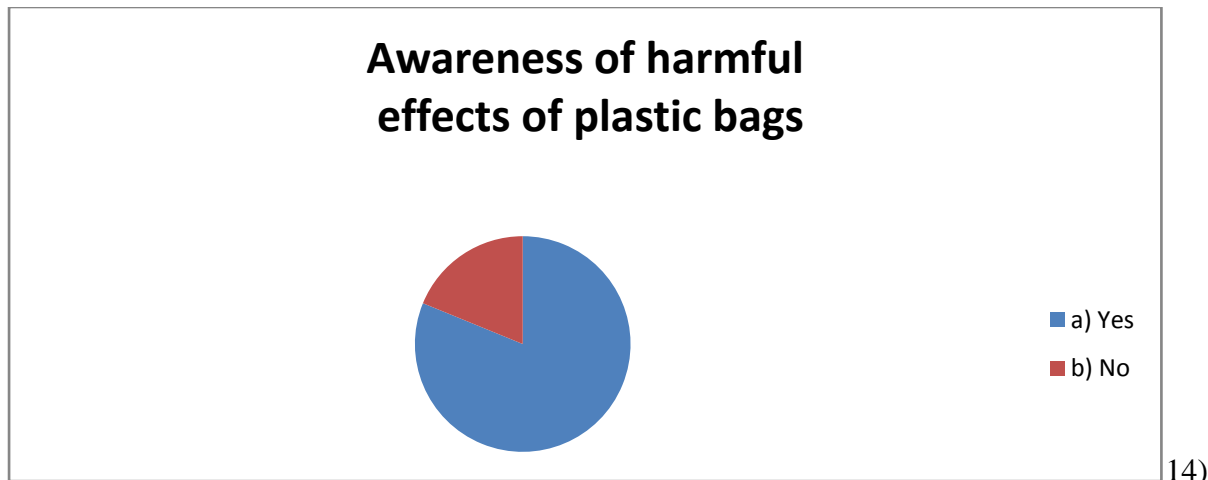


The chart shows that most of the respondents (85 out of 92) are aware that plastic bags are harmful. Only 7 respondents are not aware about it. It is a matter of surprise that they know it is harmful, still they use it.

12) Are you aware of the harmful effects of plastic bags? If yes, what are they?

Table 12

Options	No. of respondents	Percentage
a) Yes	69	81.18%
b) No	16	18.82%



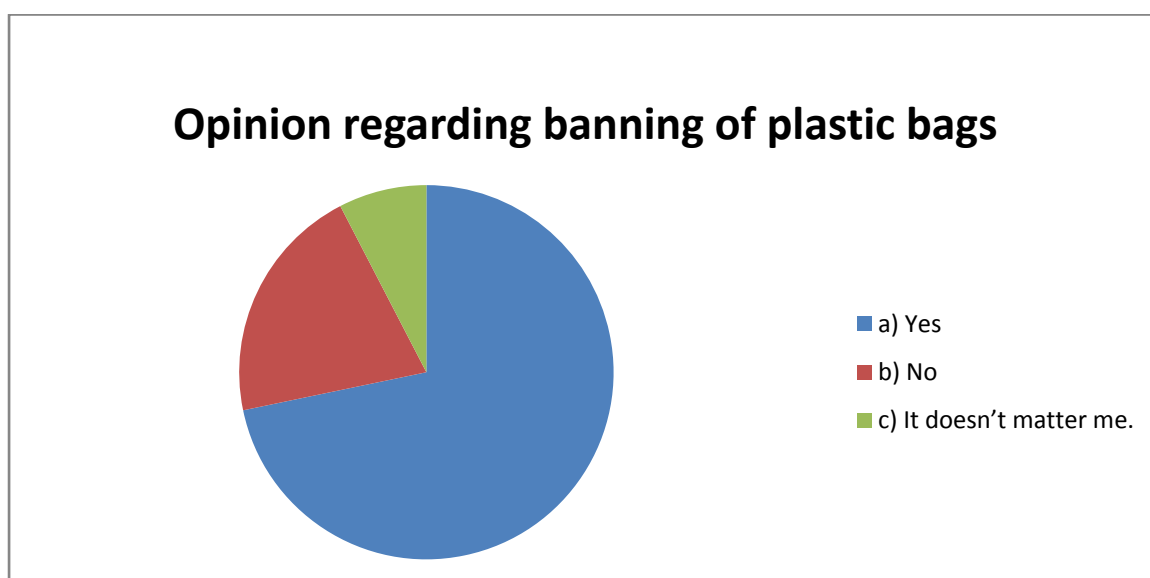
The chart shows that 69 out of 85 respondents are aware about the harmful effects of plastic bags while remaining 16 respondents know that plastic bags are harmful but they are not aware about the harmful effects of plastic bags.

13) Do you think banning of plastic bags is a good idea?

- a) Yes b) No c) It doesn't matter me.

Table 13

Options	No. of respondents	Percentage
a) Yes	66	71.74%
b) No	19	20.65%
c) It doesn't matter me.	7	7.61%



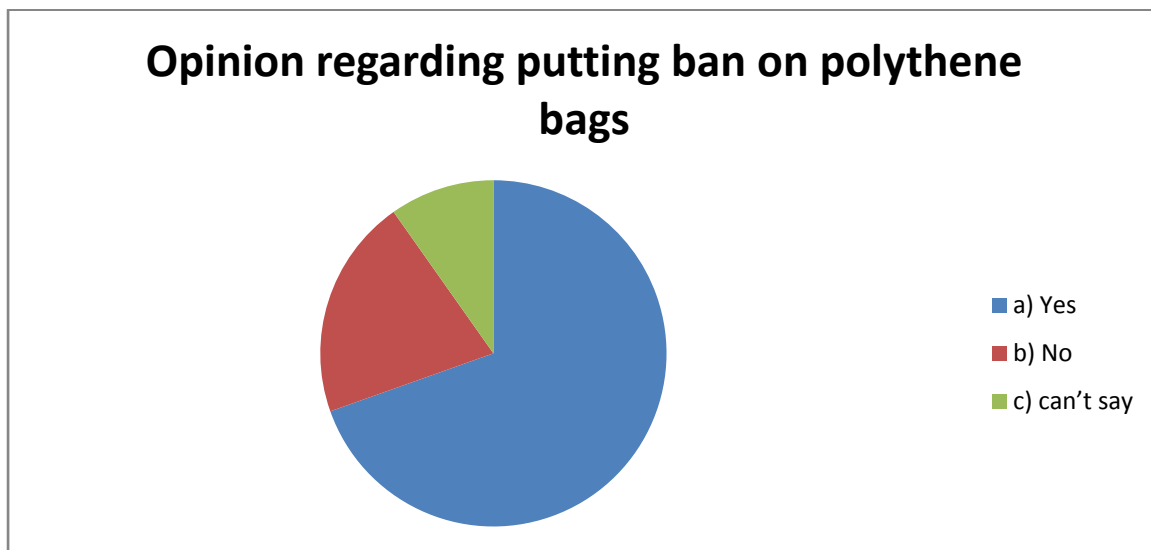
The chart shows opinion of respondents regarding banning of plastic bags. 66 respondents consider it a good step to ban the plastic bags. 19 respondents do not like banning of plastic bags. Remaining 7 are not affected by banning of plastic bags.

14) Do you think that putting ban on polythene will save our environment?

- a) Yes b) No c) can't say

Table 14

Options	No. of respondents	Percentage
a) Yes	64	69.57%
b) No	19	20.65%
c) can't say	9	9.78%



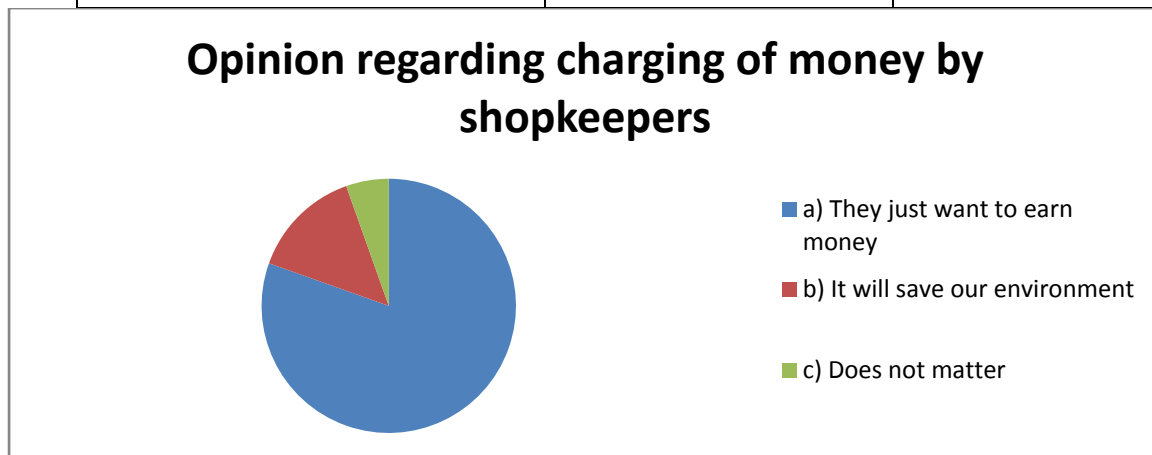
It is clear from the graph that 64 respondents think that putting ban on polythene will save our environment. 19 respondents do not agree with this. Remaining 9 can't say anything about it.

15) What is your opinion about charging of money for bags by the shopkeepers?

- a) They just want to earn money.
 b) It will save our environment because when we pay for the bag, we will not throw it.
 c) Does not matter as it is refundable.

Table 15

Options	No. of respondents	Percentage
a) They just want to earn money	74	80.43%
b) It will save our environment	13	14.13%
c) Does not matter	5	5.44%



The chart shows opinion of respondents about charging of money for bags by the shopkeepers. It is the view of 74 respondents that shopkeepers just want to earn money by charging money for it. 13 respondents say that it will save our environment. 5 respondents are not affected by it.

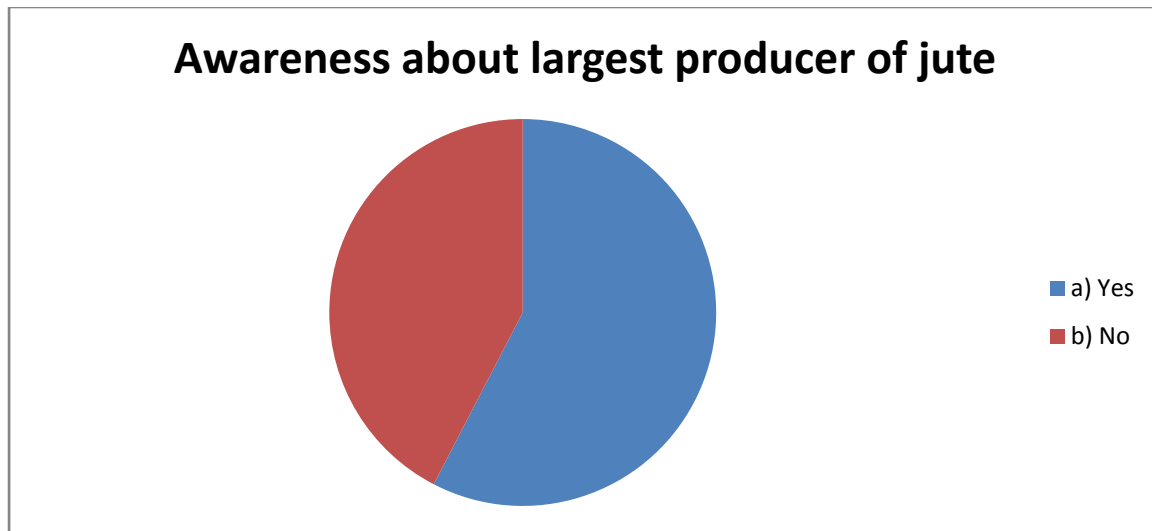
16) Do you know that India is the largest producer of jute?

a) Yes

b) No

Table 16

Options	No. of respondents	Percentage
a) Yes	53	57.61%
b) No	39	42.39%



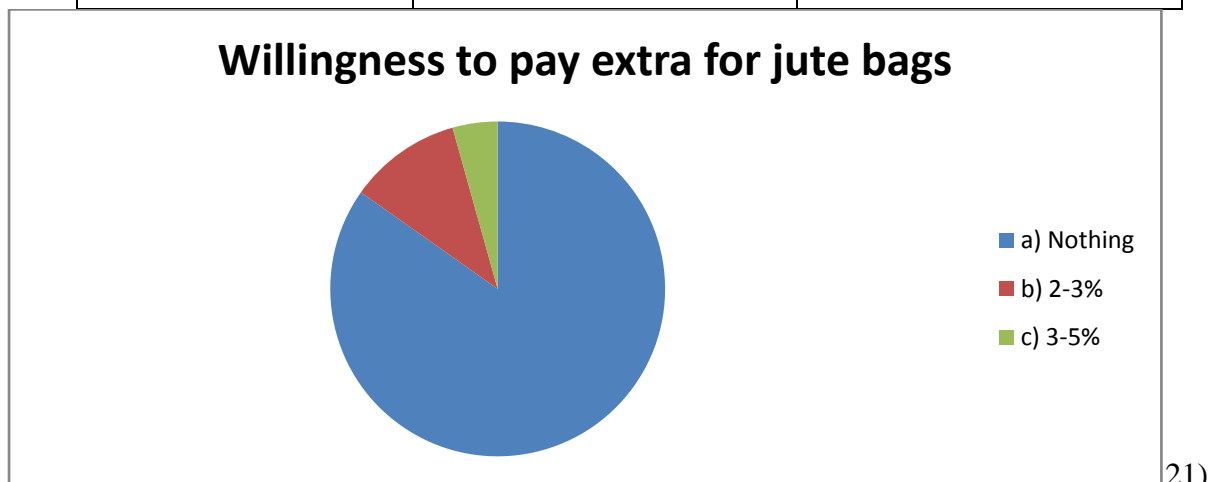
Only 53 respondents know that India is the largest producer of jute bag. Remaining 39 respondents do not know about this.

17) How much would you willing to pay extra for the jute bags coming along with the purchased product?

- a) Nothing b) 2-3% c) 3-5%

Table 17

Options	No. of respondents	Percentage
a) Nothing	78	84.78%
b) 2-3%	10	10.87%
c) 3-5%	4	4.35%



21)

78 out of 92 respondents are not willing to pay anything extra for jute bags. 10 respondents are willing to pay 2-3%. Remaining 4 respondents are willing to pay 3-5%.

18) What are the reasons according to you that people are not using jute bags?

Reasons as told by respondents are :

- They are not aware about the harmful effects of polythene.
- It is difficult to carry jute bag in the market.
- They are costly.

19) Any suggestion you want to give so that people are encouraged to use jute bags.

- Free samples of jute bags should be distributed by government.
- The cost of jute bags should be reduced.
- Polythene bags should be completely banned.
- Consumers who use polythene bags should be charged fine

Conclusion-It has been found in the survey that in spite of knowing the harmful effects of polythene bags, most of the consumers are using it. They do not want to carry jute bags for shopping as plastic bags are handy and durable. Although the government has banned the polythene bags, still people are using it as these are easily available in the market. The consumers are not encouraged to use jute bags. Some of the consumers re use the plastic bag as bin liner. They are also not willing to pay extra for the jute bags coming along with the purchased product. Some consumers are even not aware that putting ban on polythene saves our environment?

Suggestions-If the Government is really worried about the environmental issues; green marketing can be an effective tool. Although consumers are aware about green products, still they should be educated about the benefits of green products and harmful effects of using polythene. Green products fulfill all the requirement of consumers. If the Government provides jute bags with some discounts, the consumers will be encouraged to buy these bags. Free samples of jute bags can be distributed to make consumers aware about the usefulness of jute bags.

Consumers who are already using green products should be convinced in such a way that if they are using a green product, they are environment conscious and are doing good for their family and society.

The companies producing green products should provide all the details of the product. It should be printed on the product how it has been produced and how it is more effective than other products. This way the consumers will be encouraged to use jute bags.

Polythene bags are produced from petroleum. We need petroleum for other purposes. This precious resource should not be wasted for producing plastic bags.¹²

Jute is grown by the farmers in rural areas. If jute and its various products are much sought and sold in the market, then it would be a very big support for the rural people. This way most of the rural people would get employment and entrepreneurs would start setting up jute industries in those backward areas which would result in overall development of those areas.

This would solve the migration of people from rural areas to urban areas, thus reducing the burden over the infrastructure of the urban areas. The overall life standard of such people of backward areas will improve and they would be able to spend money for improving their standard of living. This would help in bringing inclusive growth for our country.

Annexure

Questionnaire

1) Gender

a) Male

b) Female

2) Profession

a) Business

b) Service

c) Housewife

d) Retired

e) Others

3) Do you go for grocery shopping?

a) Yes

b) No

4) If yes, do you carry any bag while going for market?

a) Yes

b) No

5) If no, what are the reasons?

a) Inconvenience in carrying bag from home

b) Cost of bag

c) Are willing to pay some extra amount to the shopkeeper for the bag.

d) All of these

e) Any other reason, please specify _____

6) Which bag do you prefer?

a) Ordinary plastic carrier bag

b) Plastic bag which is degradable

c) Jute bag

7) If plastic bag, why you do not prefer jute bags?

a) They are costly

b) It is inconvenient to carry them to the market

c) Any other reason, please specify _____

8) If you use plastic bag, what do you do with your plastic bag after shopping?

a) Re use for shopping again

b) use as a bin liner

c) Store them

d) Throw them away

9) If you reuse it for shopping, how many times do you generally use it?

- a) 1-2 times b) 2-4 times c) 4-5 times d) More than 5 times

10) If you are using jute bags, how do you rate the performance of the jute bags?

- a) Very good b) Good c) Satisfactory d) Poor

11) Do you know that plastic bags are harmful for the environment?

- a) Yes b) No

12) Are you aware of the harmful effects of plastic bags? If yes, what are they?

13) Do you think banning of plastic bags is a good idea?

- a) Yes b) No c) It doesn't matter me.

14) Do you think that putting ban on polythene will save our environment?

- a) Yes b) No c) can't say

15) What is your opinion about charging of money for bags by the shopkeepers?

- a) They just want to earn money.
b) It will save our environment because when we pay for the bag, we will not throw it.
c) Does not matter as it is refundable.

16) Do you know that India is the largest producer of jute?

- a) Yes b) No

17) How much would you willing to pay extra for the jute bags coming along with the purchased product?

- a) Nothing b) 2-3% c) 3-5%

18) What are the reasons according to you that people are not using jute bags?

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19) Any suggestion you want to give so that people are encouraged to use jute bags.

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A study on influence of customer relationship management on service quality and customer loyalty among the hotels in Tamil Nadu and Kerala.

Dr.S.Franklin John

Professor & Principal, Nehru College of Management, Coimbatore

Ms. K.V.Vimala

Assistant Professor, Nehru College of Management, Coimbatore

Abstract

India is one of the largest restaurant industries in the world. It attracts venture capitalists, marketing Gurus social media specialists and experienced chefs across the world. According to Indian Restaurant Congress, Indian food service industry is worth nearly 75 thousand crore and it is growing at a healthy compounded annual growth rate of 17%. This food service industry is likely to reach 1, 37,000 crore by 2015. For many years the food business seen as a tempting and lucrative opportunity reflected to the fact opening a restaurant tops the wish list of many people in India. Due to the demand and expectations of the customers and government norms made the industry move towards organizing on its own. But still 70% of the current food service industries are in unorganized sector. According to the president of Franchise India, expects the organized food service industry will grow at a rate of 20-25% per annum. If this is the scenario, we want to understand what a customer really expects from a restaurant, the answer will help the owner to develop a sustainable innovative restaurant. We are trying to develop a modal between service quality and customer loyalty to understand how these can be used for innovation and sustainability of the restaurant in the industry. The research will cover selected restaurants in Palakkad and Coimbatore for the purpose. The outcome of the study will throw some light on this industry which will be helpful for the upcoming entrepreneurs in this food service industry.

Key Words:-Service Quality, Customer Loyalty and Sustainable growth.

INTRODUCTION

India is the world's second largest producer of food next to China, and has the potential of being the biggest with the food and agricultural sector. The total food production in India is likely to double in the next ten years and there is an opportunity for large investments in food and food processing technologies, skills and equipment, especially in areas of Canning, Dairy and Food Processing, Specialty Processing, Packaging, Frozen Food/Refrigeration and Thermo Processing. Fruits & Vegetables, Fisheries, Milk & Milk Products, Meat & Poultry, Packaged/Convenience Foods, Alcoholic Beverages & Soft Drinks and Grains are important sub-sectors of the food processing industry. Health food and health food supplements are another rapidly rising segment of this industry which is gaining vast popularity amongst the health conscious.

The Indian food processing industry is expected to ride smoothly on growth track with the recovery of global economy from recession. The industry will generate revenue of around \$260 Billion from the current level of \$200 Billion by 2015. It is thus evident that the food

sector will be driving the economic revival of India. The diverse culinary habits, wide range of cuisines and the diverse cooking techniques are some of the main factors behind the growth of restaurants in India. With the market liberalization policies undertaken by the government, India has also become a consumer market with a huge customer base. This has provided a fillip to the restaurant industry in the country. With the high standard of living and the change in the lifestyle of the people, more and more consumers are also flocking various restaurants. Recent surveys have shown that there has been a growing trend among the Indians to taste various types of gastronomical delights. This has also led to the growth of restaurants which serve regional and international delicacies. The growth of the tourism industry has also been a positive factor behind the growth of restaurants in India. With more and more domestic and foreign tourists going to the popular tourist destination, it has been a boon for the restaurants. According to recent surveys, India has become one the top five destinations among the 167 popular tourist destinations.

According to recent surveys, the rate of growth of the restaurant industry in India is expected to be around 4.5 % on an average. A significant number of the workforce in the country is also engaged in the restaurant industry. According to recent surveys, by the end of the year 2012, the overall restaurant industry in the world will employ around 13.3 million people, of which India will have a significant share. However, the main challenge is to enhance the market growth of the industry. Today, the Indian restaurant industry is mainly based in the urban areas the tourist destinations. Efforts need to be made to increase the market in the rural areas as well. There are restaurants in the rural areas but most of them fall under the unorganized sector. A systematic approach is required to increase the target audience in the rural sector.

The future of the restaurant industry looks bright. With the increase in demand, the consumer patterns, the profit of this industry will also significantly rise. In fact, the restaurant industry has become a popular career option for the youngsters of India. More and more people are opting to work in different segments of this industry to start a highly successful career. New courses and study programs based on various sectors of the restaurant and food processing industries are also coming up to cater to students. Growth of restaurants in the country has put on the table not only diverse local flavours but a huge variety of international cuisines. Indian food choices are a gastronomical delight with each region offering its signature cuisine. "Eating out today is considered an experience; it has always been a way of life for Indians. It is a way of socialising in the community where people meet new people in a preordained ambience, while savouring decadent delicacies.

In the current times, restaurants have taken over the task for social gatherings, offering novelty and convenience at the same time. Independent outlets therefore continue to dominate the industry in India. There are a total of 1.5 million eating outlets in India and the number is expected to grow very rapidly in the near future," says Samir Kuckreja, president, National Restaurant Association of India (NRAI) and CEO and managing director, Nirula's.

Service quality is a comparison of expectations with performance. A business with high service quality will meet customer needs whilst remaining economically competitive. Improved service quality may increase economic competitiveness. This aim may be achieved by understanding and improving operational processes; identifying problems quickly and systematically; establishing valid and reliable service performance measures and measuring customer satisfaction and other performance outcomes. The quality of service in the

restaurant industry is difficult to evaluate, because the assessments are made not only on the service outcome, but also on the process of service delivery. Wu and Liang (2009) stated that service encounter in restaurant settings consists of three main elements: environmental elements (e.g. design, music, and lighting), employees (e.g. professional skills, reliability) and customers (e.g. interaction with other customers). To understand all characteristics of the restaurant service quality an appropriate measurement instrument should be developed. Stevens, Knutson and Patton (1995) created an instrument called DINESERV to assess customers' perceptions of restaurant service quality. The instrument was adapted from SERVQUAL and was proposed as a reliable and relatively simple tool for determining how customers view a restaurant's quality. The final version of DINESERV contained 29 items, measured on a seven-point scale. DINESERV items fall into five service quality dimensions. In the restaurant industry, tangibles refer to a restaurant's physical design, appearance of staff and cleanliness. Reliability involves freshness and temperature of the food, accurate billing and receiving ordered food. Responsiveness in restaurants relates to staff assistance with the menu or wine list or appropriate and prompt response to customers' needs and requests. Assurance means that restaurant customers should be able to trust the recommendations of staff, feel confident that food is free from contamination and be able to say any concern without fear. Finally, empathy refers to providing personalized attention to customers by anticipating special dietary requirements or by being sympathetic towards customers' problems. Furthermore, several studies were conducted in the context of service quality and customer satisfaction relationship in restaurant settings. Andaleeb and Conway's (2006) research showed that customer satisfaction was significantly influenced by the responsiveness of the employees, price and food quality. Kim et al. (2009) found out that five extracted restaurant dimensions (food quality, service quality, price and value atmosphere and convenience) had a significant effect on overall customer satisfaction. Wu and Liang (2009) reported that restaurant employees positively affect customer satisfaction. The findings of Liu and Jang (2009) indicated that food quality (taste, food safety, menu variety, food presentation), service reliability, environmental cleanliness, interior design, and neat and well dressed employees significantly influenced customer satisfaction. Customer loyalty is one of the most important keys to the restaurant success. The NRA (2003) reported that many restaurants derive a large portion of their profits from their loyal customers; in restaurants with an average check size of \$25 or more the regular customers contribute 60% of the revenue. Customer loyalty leads to higher customer retention rate and to continuous business success even in situations where failure to satisfy customers would normally cause an early termination of business.

Therefore the restaurant operation must focus not only on attracting first-time customers but also on developing long term relationship with customers. Reichheld (1999) discussed the advantages of customer loyalty to the service provider, in terms of continuous profit, reducing marketing cost, increasing per-customer revenue growth; and increasing referrals. Loyal customers are less likely to switch away by a discount (Tepeci, 1999). Customer loyalty allows increased price premium (competitive advantage) because brand loyal customers perceive some unique service and value in the brand that no other alternative can provide. Heskett *et al.* (1994) showed that loyal customers not only provide increased profits but also cover the losses incurred in dealing with less loyal customers. There is an interaction between customer satisfaction, customer loyalty and customer retention (Adams, 2005). In a fine dining restaurant, high level of service quality is one of the features that can create extra

customer satisfaction (Hanefors&Mossberg, 2003). When customers perceive good service, each one of them will tell nineto ten people. It is estimated that nearly one half of American businesses is built uponthis informal, communication “word-of-mouth” (Gitomer, 1998; Reck, 1991). Customer retention is increasingly being seen as an important managerial issue (Ahmad &Buttle,1999). Improvement in customer retention by even a few percentage points can increase profits by 25% or more (Griffin, 1995). Reichheld (1996, 2001) said that 5% increase in customer retention yields 75% increase in net present value. Customer satisfaction research is important because it is directly linked to return behavior as pointed out in therecent hospitality literature, notably by Barsky (1992, 1995), Almanza *et al.* (1994),Bojanic and Rosen (1994), Dube *et al.* (1994), Lee and Hing (1995), Stevens *et al.*(1995), Johns (1996), Johns and Tyas (1996), Oh and Jeong (1996), Pettijohnet *al.*(1997), and Qu (1997).

Need for the Study

India is one of the largest restaurant industries in the world. It attracts venture capitalists, marketing Gurus social media specialists and experienced chefs across the world. According to Indian Restaurant Congress, Indian food service industry is worth nearly 75 thousand crore and it is growing at a healthy compounded annual growth rate of 17%.This food service industry is likely to reach 1, 37,000 crore by 2015.For many years the food business seen as a tempting and lucrative opportunity reflected to the fact opening a restaurant tops the wish list of many people in India. Due to the demand and expectations of the customers and government norms made the industry move towards organizing on its own. But still 70% of the current food service industries are in unorganized sector. According to the president of Franchise India, expects the organized food service industry will grow at a rate of 20-25% per annum. If this is the scenario, we want to understand what a customer really expects from a restaurant, the answer will help the owner to develop a sustainable innovative restaurant. We are trying to develop a modal between service quality and customer loyalty to understand how these can be used for innovation and sustainability of the restaurant in the industry. The research will cover selected restaurants in Palakkad and Coimbatore for the purpose. The outcome of the study will throw some light on this industry which will be helpful for the upcoming entrepreneurs in this food service industry.

Limitations of the study

The study has covered a very small portion of the population. Hence generalization of the study may not be possible. Due to time constraints the sample were collected only from 2 restaurants in Coimbatore and four from Palakkad.

Objective of the study

- To study the influence of average monthly income on variables of service quality.
- To study the influence of frequency of visits to the restaurants on factors of service quality.
- To study the influence of type of employment on variables of service quality.

Methodology

A structured questionnaire was developed and tested for collection of data. For the research,the researcher focuses on primary data. A stratified random sampling is used for sample selection. The respondents were met and collected data in person when they were

coming out of the restaurant for the study. The collected data was analyzed and using one way-ANNOVA analysis variance.

ANALYSIS & INTERPRETAION

One way-ANNOVA between the frequency of visits to restaurants on Reliability.

Ho: The frequency of visit to the restaurants will not influence on Reliability

Reliability	Mean	Standard Deviation	F	Sig
Once	4.14	.795	.854	.494
Twice	4.32	.387		
Thrice	4.30	.565		
Four times	4.42	.457		
Five times	4.46	.457		

Table 1: To find out the difference between the influence of frequency of visits to restaurants on Reliability.

Though there is no significant difference among mean and standard deviation of number of visits to the restaurants and reliability a one way analysis of variance is performed to see the statistical significance .For the table 1 F value is calculated F value was .854 that is greater than the table value. Hence we reject the null hypothesis at 95%confidence level.

One way-ANNOVA between the frequency of visits to restaurants on Responsiveness.

Ho: The frequency of visit to the restaurants will not influence on Responsiveness

Responsiveness	Mean	Standard Deviation	F	Sig
Once	3.97	.999	.811	.521
Twice	4.10	.908		
Thrice	4.43	.597		
Four times	4.25	.830		
Five times	4.21	.958		

Table 2: To find out the difference between the influence of frequency of visits to restaurants on Responsiveness.

Though there is no significant difference among mean and standard deviation of number of visits to the restaurants and responsiveness a one way analysis of variance is performed to see the statistical significance .For the table 1 F value is calculated F value was .811 that is greater than the table value. Hence we reject the null hypothesis at 95%confidence level.

One way-ANNOVA between the frequency of visits to restaurants on Tangibility.

Ho: The frequency of visit to the restaurants will not influence on Tangibility

Tangibility	Mean	Standard Deviation	F	Sig
Once	3.96	.815	1.982	.103
Twice	4.29	.377		
Thrice	4.39	.524		
Four times	4.14	.803		
Five times	3.83	.833		

Table 3: To find out the difference between the influence of frequency of visits to restaurants on Tangibility. Though there is no significant difference among mean and standard deviation of number of visits to the restaurants and tangibility a one way analysis of variance is performed to see the statistical significance. For the table 1 F value is calculated F value was 1.982 that is greater than the table value. Hence we reject the null hypothesis at 95% confidence level.

One way-ANNOVA between the frequency of visits to restaurants on Assertiveness.

Ho: The frequency of visit to the restaurants will not influence on Assertiveness

Assertiveness	Mean	Standard Deviation	F	Sig
Once	4.34	.550	2.809	.030
Twice	4.13	.813		
Thrice	4.41	.579		
Four times	4.32	.617		
Five times	3.62	1.248		

Table 4: To find out the difference between the influence of frequency of visits to restaurants on Assertiveness. Though there is no significant difference among mean and standard deviation of number of visits to the restaurants and reliability a one way analysis of variance is performed to see the statistical significance. For the table 1 F value is calculated F value was 2.809 at is less than the table value. Hence we accept the null hypothesis at 95% confidence level.

One way-ANNOVA between the frequency of visits to restaurants on Empathy.

Ho: The frequency of visit to the restaurants will not influence on Empathy

Empathy	Mean	Standard Deviation	F	Sig
Once	4.06	.957	.476	.753
Twice	4.01	.966		
Thrice	4.26	.641		
Four times	4.23	.703		
Five times	4.26	.427		

Table 5: To find out the difference between the influence of frequency of visits to restaurants on Empathy.

Though there is no significant difference among mean and standard deviation of number of visits to the restaurants and empathy a one way analysis of variance is performed to see the statistical significance. For the table 1 F value is calculated F value was .476 that is greater than the table value. Hence we reject the null hypothesis at 95% confidence level.

One way-ANNOVA between the frequency of visits to restaurants on Convenience.

Ho: The frequency of visit to the restaurants will not influence on Convenience

Convenience	Mean	Standard Deviation	F	Sig
Once	3.84	1.165	.776	.543
Twice	4.15	.638		
Thrice	4.21	.803		
Four times	4.29	.631		
Five times	4.31	.527		

Table 6: To find out the difference between the influence of frequency of visits to restaurants on Convenience.

Though there is no significant difference among mean and standard deviation of number of visits to the restaurants and convenience one way analysis of variance is performed to see the

statistical significance .For the table 1 F value is calculated F value was .776 that is greater than the table value. Hence we reject the null hypothesis at 95%confidence level.

One way-ANNOVA between the average monthly income to restaurants on Reliability.

Ho: The averagemonthly income to restaurants will not influence on Reliability.

Reliability	Mean	Standard Deviation	F	Sig
10,000-20000	4.40	.435	1.494	.210
20,000-30000	4.21	.602		
30000-40000	4.42	.451		
40,000-50000	4.47	.326		
50000 & above	4.05	.500		

Table 1: To find out the difference between the influence of average monthly income to restaurants on Reliability.

Though there is no significant difference among mean and standard deviation on average monthly income and reliability a one way analysis of variance is performed to see the statistical significance .For the table 1 F value is calculated and F value was 1.494 that is greater than the table value. Hence we reject the null hypothesis at 95%confidence level.

One way-ANNOVA between the average monthly income to restaurants on Responsiveness.

Ho: The averagemonthly income to restaurants will not influence on Responsiveness.

Responsiveness	Mean	Standard Deviation	F	Sig
10,000-20000	4.21	.706	.724	.578
20,000-30000	4.16	.848		
30000-40000	4.20	1.101		
40,000-50000	4.54	.363		
50000 & above	4.00	.544		

Table 2: To find out the difference between the influence of average monthly income to restaurants on Responsiveness.

Though there is no significant difference among mean and standard deviation on average monthly income and responsiveness a one way analysis of variance is performed to see the statistical significance .For the table 1 F value is calculated and F value was .724 that is greater than the table value. Hence we reject the null hypothesis at 95%confidence level.

One way-ANNOVA between the average monthly income to restaurants on Tangibility.

Ho: The averagemonthly income to restaurants will not influence on Tangibility.

Tangibility	Mean	Standard Deviation	F	Sig
10,000-20000	4.21	.644	2.030	.096
20,000-30000	4.21	.695		
30000-40000	4.24	.739		
40,000-50000	4.24	.388		
50000 & above	3.25	1.075		

Table 3: To find out the difference between the influence of average monthly income to restaurants on Tangibility.

Though there is no significant difference among mean and standard deviation on average monthly income and tangibility a one way analysis of variance is performed to see the statistical significance .For the table 1 F value is calculated and F value was 2.030 that is greater than the table value. Hence we reject the null hypothesis at 95%confidence level.

One way-ANNOVA between the average monthly income to restaurants on Assertiveness.

Ho: The averagemonthly income to restaurants will not influence on Assertiveness.

Assertiveness	Mean	Standard Deviation	F	Sig
10,000-20000	4.22	.861	1.650	.168
20,000-30000	3.99	.916		
30000-40000	4.50	.246		
40,000-50000	4.29	.645		
50000 & above	3.95	1.436		

Table 4: To find out the difference between the influence of average monthly income to restaurants on Assertiveness.

Though there is no significant difference among mean and standard deviation on average monthly income and assertiveness a one way analysis of variance is performed to see the statistical significance .For the table 1 F value is calculated and F value was 1.650 that is greater than the table value. Hence we reject the null hypothesis at 95%confidence level.

One way-ANNOVA between the average monthly income to restaurants on Empathy.

Ho: The averagemonthly income to restaurants will not influence on Empathy.

Empathy	Mean	Standard Deviation	F	Sig
10,000-20000	4.12	.880	.371	.828
20,000-30000	4.17	.765		
30000-40000	4.33	.479		
40,000-50000	4.08	.891		
50000 & above	4.10	.383		

Table 5: To find out the difference between the influence of average monthly income to restaurants on Empathy.

Though there is no significant difference among mean and standard deviation on average monthly income and empathy a one way analysis of variance is performed to see the statistical significance .For the table 1 F value is calculated and F value was .371 that is greater than the table value. Hence we reject the null hypothesis at 95%confidence level.

One way-ANNOVA between the average monthly income to restaurants on Convenience.

Ho: The averagemonthly income to restaurants will not influence on Convenience.

Convenience	Mean	Standard Deviation	F	Sig
10,000-20000	4.15	.721	.209	.933
20,000-30000	4.29	.582		
30000-40000	4.16	.963		
40,000-50000	4.13	.755		
50000 & above	4.30	.200		

Table 6: To find out the difference between the influence of average monthly income to restaurants on Convenience.

Though there is no significant difference among mean and standard deviation on average monthly income and convenience a one way analysis of variance is performed to see the statistical significance. For the table 1 F value is calculated and F value was .209 that is greater than the table value. Hence we reject the null hypothesis at 95% confidence level.

One way-ANNOVA between the type of employment to restaurants on Reliability.

Ho: The employment type to restaurants will not influence on Reliability.

Reliability	Mean	Standard Deviation	F	Sig
Self-Employed	4.13	.677	2.519	.086
Government Employment	4.35	.456		
Private Employment	4.41	.414		

Table 1: To find out the difference between the influence of type of employment to restaurants on Reliability .

Though there is no significant difference among mean and standard deviation on type of employment and reliability a one way analysis of variance is performed to see the statistical significance. For the table 1 F value is calculated and F value was 2.519 that is greater than the table value. Hence we reject the null hypothesis at 95% confidence level.

One way-ANNOVA between the type of employment to restaurants on Responsiveness.

Ho: The employment type to restaurants will not influence on Responsiveness.

Responsiveness	Mean	Standard Deviation	F	Sig
Self-Employed	4.12	.818	.427	.653
Government Employment	4.16	.898		
Private Employment	4.30	.801		

Table 2: To find out the difference between the influence of type of employment to restaurants on Responsiveness .

Though there is no significant difference among mean and standard deviation on type of employment and responsiveness a one way analysis of variance is performed to see the statistical significance. For the table 1 F value is calculated and F value was .427 that is greater than the table value. Hence we reject the null hypothesis at 95% confidence level.

One way-ANNOVA between the type of employment to restaurants on Tangibility.

Ho: The employment type to restaurants will not influence on Tangibility.

Tangibility	Mean	Standard Deviation	F	Sig
Self-Employed	4.09	1.005	.557	.575
Government Employment	4.10	.680		
Private Employment	4.24	.561		

Table 3: To find out the difference between the influence of type of employment to restaurants on Tangibility .

Though there is no significant difference among mean and standard deviation on type of employment and tangibility a one way analysis of variance is performed to see the statistical significance .For the table 1 F value is calculated and F value was .557 that is greater than the table value. Hence we reject the null hypothesis at 95% confidence level.

One way-ANNOVA between the type of employment to restaurants on Assurance.

Ho: The employment type to restaurants will not influence on Assurance .

Assurance	Mean	Standard Deviation	F	Sig
Self-Employed	4.18	.909	.695	.502
Government Employment	4.06	.951		
Private Employment	4.29	.669		

Table 4: To find out the difference between the influence of type of employment to restaurants on Assurance .

Though there is no significant difference among mean and standard deviation on type of employment and assurance a one way analysis of variance is performed to see the statistical significance .For the table 1 F value is calculated and F value was .695 that is greater than the table value. Hence we reject the null hypothesis at 95% confidence level.

One way-ANNOVA between type of employment to restaurants on Empathy.

Ho: The employment type to restaurants will not influence on Empathy.

Empathy	Mean	Standard Deviation	F	Sig
Self-Employed	4.37	.412	.953	.389
Government Employment	4.22	.743		
Private Employment	4.10	.815		

Table 5: To find out the difference between the influence of type of employment to restaurants on Empathy .

Though there is no significant difference among mean and standard deviation on type of employment and empathy a one way analysis of variance is performed to see the statistical significance .For the table 1 F value is calculated and F value was .953 that is greater than the table value. Hence we reject the null hypothesis at 95% confidence level.

One way-ANNOVA between the type of employment to restaurants on Convenience.

Ho: The employment type to restaurants will not influence on Convenience.

Convenience	Mean	Standard Deviation	F	Sig
Self-Employed	4.18	.649	.586	.559
Government Employment	4.05	.912		
Private Employment	4.25	.699		

Table 6: To find out the difference between the influence of type of employment to restaurants on Convenience .

Though there is no significant difference among mean and standard deviation on type of employment and convenience a one way analysis of variance is performed to see the statistical significance .For the table 1 F value is calculated and F value was .586 that is greater than the table value. Hence we reject the null hypothesis at 95% confidence level.

Suggestions

1. From the study we understand that frequency of visits to the restaurant is not influencing the variable of service quality except Assurance .As the frequency of visit increases the customer will develop a sense of relationship with the restaurant. Due to this fact the Assurance is influenced by frequency of visit. All other factors are not so volatile in nature with respect to food industry is concerned.
2. Its surprising to know the fact that the average monthly income is not influencing the service quality of restaurants in India. It may be due to the fact that now a days due to high amount of education among customers of Indian restaurant .All the customers expect same kind of service quality from the restaurants.
3. From the study we understand that the type of employment is also not influencing the service quality of restaurants in India. It may be because of the fact of high profile employment of the customers.

Conclusion

From the study both from the literature of review and data analysis we can understand the process of restaurant industry and the customer expectations towards the restaurant industry in India. The customers are always attached sentimentally with a particular restaurant. It is very difficult for a customer to be associated himself or herself from the industry. From the analysis, we can understand customers are highly sensitive towards the way they were treated in the restaurant by the employees. It is recommended that the restaurant industries has to give continuous training to their employees towards customer handling .For this there is supposed to be a good feedback system involving customers in to the feedback process. These kind of innovative practices will increase customer loyalty and decreases service quality gaps.

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A STUDY ON EMPLOYEE WELFARE AND EMPLOYEE MOTIVATION IN THE PRIVATE TEA FACTORIES AT NILGRIS DISTRICT

DR.K.GUNASEELAPRABHU, RESEARCH GUIDE,
ASSOCIATE PROFESSOR, DEPARTMENT OF MANAGEMENT SCIENCE (PG) - MBA,
SRI RAMAKRISHNA COLLEGE OF ARTS & SCIENCE, (FORMERLY S.N.R. SONS COLLEGE),COIMBATORE-641 006.

SANDHIYA G
RESEARCH SCHOLAR
SRI RAMAKRISHNA COLLEGE OF ARTS & SCIENCE
(FORMERLY S.N.R. SONS COLLEGE)
COIMBATORE

ABSTRACT

The main focus of this article is to note that the motivation and employee welfare plays the major role for any employee to have a job satisfaction. The study is focused in the Nilgris district on tea factories employees. The study is a descriptive one and it hold both the primary and secondary data. It has used the simple random technique to work on with the data. Have used the SPSS and PSPP software to carryout the analysis part. The result of the study states that the employees are given with their best welfare measures and then they are given proper motivation when they are lacking or during particular phases of their business operations.

KEYWORDS: EMPLOYEE, WELFARE, MOTIVATION, BENEFITS, FACILITIES

INTRODUCTION TO HRM

Human Resource Management (HRM) is a relatively new approach to manage people in any organization. This approach considers people as the key resource. It is concerned with the people dimension in management of an organization. Since an organization is a body of people, their acquisition, development of skills, motivation for higher levels of attainments, as well as ensuring maintenance of their level of commitment are all significant activities. These activities fall in the domain of HRM. HRM is a process, which consists of four main activities, namely, acquisition, development, motivation, as well as maintenance of human resources. Human Resource Management is responsible for maintaining good human relations in the organization. It is also concerned with development of individuals and achieving integration of goals of the organization and those of the individuals.

According to John Storey, (1995), "Human resource management is a distinctive approach to employment management which seeks to achieve competitive advantage through the strategic deployment of a highly committed and capable workforce, using an integrated array of Cultural, structural and personal techniques".

People in authority, of any organization who are responsible for looking after and managing the staff of that organization are called as Human Resource Management. It comprises of the functions and principles that are applied to retaining, training, developing, and compensating the employees in organization. Its concept is equally important for non-business organizations, such as education, healthcare etc. Human Resource Management is

defined as the - set of activities, programs and functions that are designed to maximize both organizational as well as employee effectiveness. All the activities of employee, starting from his first entry step, his whole duration in the office until the time has left for home, are included within this aspect.

The various hands of HRM are Recruitment, Payroll, Performance Management, Training and Development, Motivation, Employee Welfare, Retention, Industrial Relation, etc. But most important ones are training and development that comprise the crux of the matter.

INTRODUCTION TO EMPLOYEE / LABOUR WELFARE

Labour welfare is an important dimension of industrial relation, labour welfare includes overall welfare facilities designed to take care of well-being of employee's and in order to increase their living standard. It can also be provided by government, non-government agencies and trade unions. The concept of labour welfare is flexible and elastic and differs widely with time, region, industry, social values and customs, degree of industrialization, the general socio – economic development of the people and the political ideologies prevailing at a particular time. It is also molded according to the age – group, sex, socio – cultural background, marital and economic status and educational level of the workers in various industries.

Labour Welfare- Definition

According to the Committee on Labour Welfare, welfare services should mean: Such services, facilities, and amenities as adequate canteens, rest and recreation facilities, sanitary and medical facilities, arrangements for travel to and from place of work, and for the accommodation of workers employed at a distance from their homes; and such other services, amenities and facilities, including social security measures, as contribute to the conditions under which workers are employed.

- The employers need welfare activities to discharge their social responsibility, raise the employees morale use the work force more effectively and to reduce friction with workers and to avoid Welfare facilities besides removing dissatisfaction help to develop loyalty in workers towards the organization.
- Welfare may help minimize social evils, such as alcoholism, gambling, prostitution and drug addiction.
- To create harmonious industrial relationship.

INTRODUCTION TO MOTIVATION

Motivation refers to the process of inspiring people for doing tasks and achieving goal and desires. It is a psychological occurrence that originates from wants and needs of people. It initiates a goal-oriented behavior. It is the force that drives individuals into action

DEFINITION OF MOTIVATION

- According to Dalton E. MC Farland, “Motivation refers to the way in which urges, drives, desires, aspirations, strivings or needs direct, control or explain the behaviour or human beings”.

- According to S.P.Robbins, "Motivation is the willingness to exert high levels of effort towards organisational goals, conditioned by the effort and ability to satisfy some individual need".

The Hertzberg's two-factor Theory

Frederick Herzberg's two-factor theory, aka intrinsic/extrinsic motivation, concludes that certain factors in the workplace result in job satisfaction, but if absent, lead to dissatisfaction. The factors that motivate people can change over their lifetime, but "respect for me as a person" is one of the top motivating factors at any stage of life. He distinguished between motivators; for example challenging work, recognition and responsibility which give positive satisfaction, and hygiene factors; for example status, job security, salary and fringe benefits that do motivate if present, but, if absent, result in demotivation. The name Hygiene factors is used because, like hygiene, the presence will not make you healthier, but absence can cause health deterioration. This theory is still valid in the contemporary world for instance; Duening and Ivancevich (2003) observe that hygiene factors are those that result in dissatisfaction of employees which also include salary, working conditions, policies and administration of companies and interpersonal relation. On motivation and wages as stated by Hertzberg (1959), high payment of salaries makes employees to develop interest in their work and stop absenting themselves from duty. This is because money is a motivator to the employees. Therefore, this study determined the influence of recognition on tea factory employee performance in tea factories of Kisii County as stipulated in the Herzberg's two-factor theory.

The Maslow Hierarchy of Needs

The Maslow (1954) in his hierarchy of needs stated that human beings including employees have five hierarchies of need for them to survive. These needs are: Physiological needs which are basic like food, water, shelter, fresh air and sex. Self-needs which are needs for protection against danger, job protection and social needs for love, affection and acceptance of belonging to the group. Esteem needs which help to have a stable firmly based and high evaluation of oneself to have respect for others. Finally, self-actualization (selffulfillment) which is the need to develop potentials and skills. Substantial remuneration in terms of salaries satisfy all the above human needs. If the salaries are low, then the employees become discouraged and may lead to laxity resulting to absenteeism and low productivity. Therefore, this study examined the influence of empowerment policy and recognition on tea factory employee performance in tea factories of Kisii County as enshrined in the Maslow Hierarchy of Needs.

OBJECTIVES OF THE STUDY

- To analysis the employee motivations study of the respondents
- To identification the respondents level of motivation in a working organization
- To identify the effective reasons for the determined level of welfare given

REVIEW OF LITERATURE

Richard Omwoyo Oroni, Dr. Mike Iravo, Dr. Charles Munene Elijah, "Influence of Motivation on Tea Factory Employee Performance in Kenya. A Case of KISII County,

Kenya”, This study employed a descriptive survey research design. The target population for this study consisted of twenty managers, 200 permanent employees and 300 temporary employees from the tea factories in Kisii County. Purposive sampling was used to sample key informants who in this case are the twenty managers. In this study, 30% of permanent and temporary employees comprised the sample size. Simple random sampling was used to select the permanent and semipermanent employees. The sample size therefore comprised of 20 managers, 60 permanent employees and 90 temporary employees. This study used questionnaires, interview schedules and document analysis as data collection instruments. The reliability and validity of research instruments was conducted before embarking in data collection. In this, study data was organized, presented, analyzed and interpreted using descriptive statistical techniques. The findings of the study may enable the management of tea factories in Kisii County in general to establish the motivational structures responsible for motivation of the employees in the factory.

A.Mahalakshmi, S.Franklin John, “A Study On The Impact Of Motivational Factor On Employee Job Satisfaction With Special Reference To Tea Plantation Industries Of Anamallais, Coimbatore, District”, The motivational factor plays a vital role in employee job satisfaction. The objective of the study is to analyse the impact of motivational factors on job satisfaction of employees. This is an exploratory study based on primary data. The primary data is collected through the questionnaire. The data is collected from the middle level management staff performing their office work, field work and factory work. The statistical tool used for the study is mean, standard deviation and variance. The study concludes the intrinsic motivational factors are having significant relationship with job satisfaction of employees than the other factor such as working condition, compensation benefits and fringe benefits.

Ankita Srivastava, Dr. Pooja Bhatia, 2013, A Qualitative Study of Employee Motivation Factors In Nationalized Banking Sector Of India. The study focuses on motivation as one of the most important factors that may contribute to employee performance has been examined in relation to the nationalized banking sector in India. It will be observed in this study that the most important factors that motivate employees are, respectively, "salary equitable and promotion", "health benefit extended facilities and other social" and "work environment". The main objective of this study was to "assess the role of motivation in work performance of employees". This study on an evaluation of this end uses deductive approach in which qualitative survey was conducted among the students of the Business School is supposed to prospective employees. The survey was designed to get answers on what they consider the best factors that could motivate them as future employees from a list of ten factors of motivation. The analysis of the results showed that job satisfaction is the most matched.

Ronald Egerton Magutu Ogora and Dr. Willy Muturi, Perceived Factors Affecting Employee Turnover in Kenya Tea Development Authority: The Case of Kiamokama Tea Factory, Kisii Central Sub-County, Kisii County, Employee turnover is being witnessed in every organization in response to changes in global competitiveness and advancement in technology. As a result, employee turnover has been attributed to workplace conditions that appear to cause employees to leave individual workplaces or the profession altogether, as opposed to focusing on factors associated with employees who transfer or quit. It is against this reason that this research was undertaken to assess the perceived factors affecting employee turnover in Kenya tea development authority: the case of the Kiamokama tea factory, Kisii Central Sub-County, Kisii County. The study was guided by one general

objective and three specific objectives: To establish how employee participation, job satisfaction and employee motivation influence employee turnover in KTDA. Descriptive and explanatory research designs were adopted with staff being the target population. Random sampling and purposive sampling technique were used to select a sample size from at least 30% of the target population as respondents for the study between January 2015 and May 2015. Document analysis and self administered questionnaires were used as data collection instruments. The questionnaires were pre-tested for validity and reliability in a factory in a neighboring Sub-County to avoid respondent contamination. Data was analyzed both quantitatively and qualitatively. Data was analyzed using descriptive statistics mainly standard deviation and inferential statistics, specifically correlation at =0.05 significance level to determine the direction and nature of association between independent variables and dependent variables. The results were tabulated using frequency distribution tables. Findings from this study established a strong negative correlation between the independent variables and depended variables. This will assist KTDA managers and other stakeholders on how to retain their staff for better performance because if proper action is taken on employee turnover, the performance among employees will be enhanced which in turn may increase productivity of the organization.

Dr.K.Rajukkannu, 2015, Analyzation of Job Satisfaction the Wentworth Tea Factory, At the Nilgiris District in Tamil Nadu, The most common way of measurement is the use of rating scales where employees report their reactions to their jobs. Questions relate to pay, work responsibilities, variety of tasks, promotional opportunities the work itself and co-workers. Some questions are of yes or no while others ask to rate satisfaction on 5 scales starting from Highly Satisfied to Highly Dissatisfied.

RESEARCH METHODOLOGY

The Tea Plantation workers working in Nilgiris district are considered as the target audience for the research study. The primary data collection is done by person administered survey for analysis and interpretation; the secondary data collected from various magazines and journals discussed earlier related to the research study. Type of research is descriptive type of Research is undertaken to determine the motivation level and welfare measures of the tea plantation workers in Nilgiris district. Sampling technique is the area Sampling is applied and it is quite close to cluster sampling and is often talked about when the total Nilgiris District area of interest happens to be big one.

Under area sampling we first divide the total Nilgiris District into a number of smaller non-overlapping areas, generally called geographical clusters, then a number of these smaller areas are randomly selected, and all units in these small areas under Nilgiris District are included in the sample. Area sampling is especially helpful where we do not have the list of the population concerned. It also makes the field interviewing more efficient since interviewer can do many interviews at each location. Sample Size is from the workers of the tea plantation in nilgiris district are the target population. The total population of this study is 245. Area of the study is the method of research which the Researcher have undertaken is based on the analytical (Present position), Historical (previous position), Comparative (comparison with other places), statistical (collection of details and conditions), Critical (finding out the defects and suggestions), The Researcher has selected the following managements for this study namely

ANALYSIS AND FINDINGS OF THE STUDY

General Information:

0.4 % of the respondents are 'Below 18' years of age, 2% of the respondents are '18-25' years of age, 35.9% of the respondents are '26-35' years of age, 34.7% of the respondents are '36-45' years of age and 26.9% of the respondents are 'Above 45' years of age. 50.2% of the respondents are 'Male' whereas 49.8% of the respondents are 'Female'. 95.1% of the respondents got 'Married' whereas 4.9% of the respondents are 'Unmarried'.

Working Experience and Timings:

1.6% of the respondents working 'Less than 1 year' whereas 6.9% of the respondents working 'Between 1 and 3 years', 30.6% of the respondents working 'Between 3 and 5 years', 60.8% of the respondents 'More than 5 years'. Majority 78% of the respondents working 'Between 7 to 9 hours' per day. 98% of the respondents working 'Six' days per week and majority 68.6% of the respondents getting salary by 'Cash' only.

Workers' Contract Information:

93.5% of the respondents are in 'Direct contract with the company' only. 62% of the respondents are 'Written Contract' with the company. 85.7% of the respondents are paid by the 'Company' only. 57.1 % of the respondents never get paid for extra working hours. Maximum respondents 51.4% are not agreeing with wages. 25.7% of the respondents are physically challenged person whereas 74.3% of the respondents stated 'No'. The result shows that the maximum respondents are physically not challenged.

Social Security Cover and Health information:

77.1 % of the respondents stated that they do not have any social security cover. Majority 69.8% respondents do not have pension. 89.8% do not have unemployment insurance. 53.9 % respondents have not getting company side medical assistance. Majority 57.6% of the respondents having '2 Intervals' during working hours. 94.3% respondents stated that the management is not providing transport facilities for the administration & operative purpose and education of the children of the workers.

Wages and Other financial benefits:

94.7% of the respondents receiving between 'Rs.3000-Rs.5000' as their average monthly income. 91.4% of the respondents receiving between 'Rs.2000-Rs.4000' as their carry home pay. 66.5% of the respondents stated that the management is not providing leave with wages. 66.1% of the respondents stated that the management is not providing dearness allowance and other benevolent benefits to the workers. 54.7% of the respondents stated that the management is not providing sickness benefits to the workers. 53.9% of the respondents stated that the management is not providing payment at the correct time. 60.8% of the respondents stated that maximum respondents are not satisfied with the present system of fixation of wages. 65.7% of the respondents are not educated with wage notification issued by the state and central authorities. 69% of the respondents stated that there is a wage difference between male and female workers. 43.3 % of the respondents stated that the management following the provisions of minimum bonus system as 20% bonus system which was introduced by late Prime Minister Indira Gandhi. 65.7% of the respondents stated that the management not providing the Sunday wages to the workers. 55.5% of the respondents stated that the maximum respondents stated that the management do not complies with the general provident fund dues act 1925.

Socio-Economic Condition:

90.6% of the respondents stated that human rights violation is happening. 91.8% of the respondents stated fundamental rights violation is happening. 90.2% of the respondents

stated that they have isolation physically and mentally because of ruthless attitude of management.85.3% of the respondents stated there is an exploitation based on socio-economic status.79.2% of the respondents stated that they are aware of the historical hunger strike and labour oppression.

CONCLUSION

The employee very sensitive and attribute the particular selection of workers to respondents. Number of respondents to gathering information totally indecent the making major decisions. The organization to motivate the employees well job surety to management is the important to every factory. The respondents to satisfy for this work. Working hours and mostly employee to agree to the job security. Satisfactions for the job in a tea factory select employee collecting data. Motivation can have an effect on the output of your business and concerns both quantity and quality

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A COMPARATIVE STUDY OF HOME LOANS OF SBI AND HDFC BANKS WITH REFERENCE TO GHAZIABAD DISTRICT

Dr. BHISHAM KAPOOR

Associate Professor & (Ex-Officiating Principal) Faculty of Commerce and Business Administration M.M.H College, Ghaziabad, U.P.

Mr. RAMESH KUMAR

Research scholar commerce Department of CCS University Meerut U.P.

ABSTRACT

Home is a basic need of a human being and every citizen of the country dreams of having his own house. Development of housing sector is an important facet of economic development of a country. Purchasing of dream home is not very far away with home loan, which will fulfill the dream into reality. The demand for home loans has increased in the last decade. There are number of housing finance companies and banks offering home loans. The home loan schemes of public and private sector banks are very competitive. Present study is based on comparative analysis of home loans offered by public sector and private sector banks in National Capital Resion. The paper also examined the satisfaction level and problems faced by customers while availing home loan. For this purpose we have taken two commercial banks in NCR namely SBI and HDFC Banks. It includes one public sector bank and one private sector bank. In the research methodology a sample size of 180 respondents has been taken through random sampling. For the study we have collected both primary data as well as secondary data. Finally the whole research was carried out in a systematic way to reach at exact result. The whole research and findings were based on the objectives.

KEYWORDS: Home Loans, public sector banks, private sector banks and NCR.

INTRODUCTION

Shelter is a basic human need and productive investment. Home loan means a sum of money borrowed from a financial Institution or Bank to purchase a house. Home loan consists of an adjustable or fixed rate payment terms. As most of the people don't have the cash funds to pay for a home, outright they can apply for a home loan which will pay the upfront costs for the home also which will have to be paid back monthly over a specified period of time. Without home loans most of the people could not afford to buy a home. According to National Association of Home Builders, the housing industry as a whole contributes about 17% to 18% of the nation's GDP. The most common purpose of a home loan is to provide funds to a buyer who needs to purchase a home. Home Equity loans allow a home owner to borrow against the difference between the home's value and the current loan balance. A home loan is a long term commitment which is critical. The demand for home loans has increased manifold in the last decade. The reason for this growth is not hard to see, changing mindset with globalization and integration with the developed economies, where mortgages rule the roost, income tax sops in the Union Budgets and substantial rise in the income-generating capacity of Indian youth. So, the present scenario of home loans shows good amount of growth and is heading for a bright future. There are number of banks and housing finance companies offering cheap home loans at a low interest rate. The home loan schemes offered by both public and private sector banks are very competitive. Mostly

people prefers public sector banks for home loans, especially because they believe that it is more secure bank and interest rate is lower. On the other hand the private sector banks are coming daily in our country and the preference of younger population is changing because of services & facilities provided by them.

LITERATURE REVIEW

Several studies have been done by various researchers in the context of home loans. The details of reviews are below:

Berstein David (2009) examined in his study taken from 2001 to 2008 that in this period there is increasing use of home loans as compared to private mortgage insurance (PMI).

Vandell, Kerry D (2008) analyses the sharp rise and then suddenly drop down home prices from the period 1998- 2008. Changes in prices are for the reasons as such economic fundamentals, the problem was not subprime lending per se, but the dramatic reductions and subsequent increases in interest rates during the early- mid-2000 , the housing loan boom was concentrated in those markets with significant supply-side restrictions, which tend to be more price-volatile. The problem was not in the excess supply of credit in aggregate, or the increase in subprime per se, but rather in the increased or reduced presence of certain other mortgage products.

La courr, Micheal (2007) analyses in his study, the factors that affect the increase in the level of Annual percentage rates (APR) spread reporting during 2005 over 2004. The three main factors are (1) changes in lender business practices; (2) changes in the risk profile of borrowers; and (3) changes in the yield curve environment. The result shows that after controlling the mix of loan types, credit risk factors, and the yield curve, there was no statistically significant increase in

La cour Micheal (2006) examined the home purchase mortgage product preferences of LMI households. Objectives of his study were to analysis the factors that determined their choice of mortgage product. The role pricing and product substitution play in this segment of the market and to verify whether results vary when loans are originated through mortgage brokers. In this case regression analysis has been used and results have shown that high interest risk reduces loan value.

Dr. Rangarajan C. (2001) said that the financial system of India built a vast network of financial institutions and markets over times and the sector is dominated by banking sector which accounts for about two-third of the assets of organized financial sector. DePaul Singh (2001) in his study entitled consumer Behavior and Bank Retail products an Analysis "Stresses that the borrowers attitude is an important factor for the improvement of housing loan schemes. R.R.Krishna and

V.S.Krishna Mouthy (1999) stress in their article entitled "Trend and policy Issues of Housing finance in India", that simplified procedures and speedy sanction of housing loans will give a boost to the constructing houses.

Sharma and Garg (2014) this study concluded that the public sector banks are very popular among the customer these days because the interest rate is lower in State Bank of India as compare to H.D.F.C. bank and the trust level that customer have with these banks is very high in comparison to H.D.F.C. bank. The public sector bank also provide better facilities and services to the customer and give all the information to the customer time to time through Short Message Service(SMS) and internet banking. The information provided by the private banks is sometimes fake and they tried to cheat customer for their own benefits.

Gupta and Sinha (2015) this examining on the respondent regarding the purchase of home loan and low rate of interest, easy accessibility, status/ reputation of the institution and scheme offered by the company are the major factor for selection of the housing finance institution comparative study on Factor Affecting consumer's Buying Behavior towards Home Loan (with special reference to S.B.I. and L.I.C.H.F.L.)” and found that fixed rate of interest is most preferred option by the customers.

Chithra and Muthurani (2015) this study conducted on customer perception towards home loan in H.D.F.C are done Chennai with the 85 sample size and simple random sampling. The study shows that H.D.F.C. bank home loans has product portfolio for satisfying different consumer needs. The bank has got goodwill and this can be used for promoting its services. If new promotional activity and services introduced, it will help very much to organization to increase the business.

Murugan and Jansirani (2017) a study carried out in Chennai to Customer perception towards home loan by selecting the 500 customer on randomly basis. This study made an attempt to evaluate in depth the performance and operational problems faced by the banking sector in extending finance to the housing sector and based on findings; identify the areas of concerns and strategic interventions required.

Research Objectives

- ❖ To undertake the comparative analysis of SBI and HDFC bank in housing loan sector.
- ❖ To study consumer preference for SBI and HDFC banks.
- ❖ To analyze the satisfaction level of customers of SBI and HDFC banks in home loan segment.
- ❖ To study the problems faced by customers in obtaining the home loans.

Research Methodology

Proposed study is an empirical one and is based on Primary as well as secondary data.

Collection of Primary Data:

The primary data for my study was collected by conducting survey among 100 people through Questionnaires and telephonic Interview. Primary data also included information collected by personal interview with the employees of SBI and HDFC Bank.

Collection of Secondary Data:

The sources of secondary data include Annual Reports, Manual, Research papers on Housing loan , Websites and official records of SBI Bank and HDFC bank.

Sample Techniques:

The sample was selected using a convenient sampling.

Area of Study

Primary data for present study was collected from the Ghaziabad district of U. P. through Questionnaires and telephonic Interview.

Table-1

Home Loan Comparison of SBI & HDFC Bank

S.No.	Base	SBI Bank	HDFC Bank
1	Interest Rate	8.65% – 9.25%	8.65% – 9.45%
2	Processing Fees	0.35% of loan amount + GST	Up to 0.50% of the loan amount or Rs.2,000 whichever is higher, plus applicable taxes.
3	Maximum Tenure	30 years	30 years
4	Loan Amount of Assets	75% -90%	75% -80%

Table 1 compares the home loans of SBI bank and HDFC bank on the basis of interest rate, processing fees, tenure and loan percentage of assets value. The rate interest of both banks are at same level but customers perceive SBI provides less costly loans as it is a government undertaking. But processing fees of HDFC bank is more than SBI bank. If compare loan ratio of assets value SBI bank provides more loan.

Table-2

Data Analysis and Interpretation

Measurement of Customer Satisfaction Level of SBI & HDFC Bank

S. NO.	BASIS	SBI BANK	HDFC BANK	REMARKS
1	Behaviour of staff	65%	80%	Ratio differ 15%
2	Time taken process	60%	80%	Ratio differ 20%
3	Continuous service	70%	65%	Ratio differ 5%
4	Communication Skill	60%	75%	Ratio differ 15%
5	Interest rate satisfaction	80%	70%	Ratio differ 10%



Table-2 and above diagram compare the home loans of SBI and HDFC bank on the basis of information collected from customers of both banks. Customers were asked question related to various aspects like behavior of staff of banks employees, time taken in processing for approval of home loans, services to customers at the time of approvals and after approvals of home loans, communication skills of employees of both banks and customers satisfaction level related to interest rates. Both banks compete with each other and give though completion in all aspects. If we see customer satisfaction of customers its 65% in SBI and 80% in HDFC. Customers are more satisfied from the processing time of HDFC bank.

FINDINGS

- ❖ Quality of service like behaviour and time taken to process is very much important criteria which as seen by people before taking home loan.
- ❖ According to my survey , respondents are satisfied from the SBI and HDFC banks on certain parameters but level of satisfaction differs..
- ❖ People get knowledge about home loans from Television, Internet etc.
- ❖ According to my survey, interest rates on home loan of SBI bank are lower than HDFC Bank.
- ❖ According to my study, loan procedure of HDFC is easy than SBI Bank.
- ❖ According to my survey maximum people say that hidden charges are taken by private banks.
- ❖ Processing fee of HDFC Bank is more as compare to SBI bank.
- ❖ According to my survey, tenure of home loan affects in their selection.
- ❖ According to my survey maximum respondents grade HDFC loan procedure as excellent and loan procedure of SBI bank a time consuming process.

SUGGESTIONS

- ❖ The staff should be trained to deal with the customers.
- ❖ Staff should be friendly and approachable.
- ❖ To introduce plans for the low- income group.
- ❖ Bank should review the housing loan portfolio at periodical intervals for capturing the

new market to avoid risk and for updating their schemes.

- ❖ Branches can arrange customers meeting to popularize their loan schemes.
- ❖ Attractive incentives should be given to borrowers.
- ❖ Forms of loan application should be simplified.
- ❖ All information regarding housing loan should be available on the website.

LIMITATIONS

- ❖ This research study was time bound.
- ❖ This research study was taken in a limited area only.
- ❖ More public and private banks can be analyzed to compare public and private and public sector banks
- ❖ Respondents may give biased answers for the required data. Some of the respondents didn't like to respond.

CONCLUSIONS

On the basis of data analysis and preparation, I would notify that people equal preference to SBI and HDFC bank but give more weightage to SBI Bank as it is government undertaking. Youngsters prefer private banks because of the services and facilities offered by them. Customer satisfaction becomes the most differentiating factor for housing loan.

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INVESTMENT PATTERN OF HIGH NETWORTH INDIVIDUALS (HNIs) IN SALEM DISTRICT, TAMILNADU

*O.M. Jaya Priya

* Research scholar, Bharathiar University, Coimbatore, Tamilnadu..

**Dr. Kannan

** Assistant Professor, Government Arts College (Autonomous), Karur.

Abstract

This research aims to discuss the investment pattern of high net worth individuals in Salem district, Tamilnadu. Investment is one of the foremost concerns of each individual investors for their bright future. This analysis takes into account the HNIs investment preference and their investment decision. Three Hundred (300) respondents constitute the research sample. The investment needs/goals, investment objectives, factors influences on investment decision of high net worth individual's related construct have been developed based on literature. Each construct has been analysed with the help of the structural equation model. The relationship between the different construct has been analysed. The findings and suggestion will be useful for high network individual to improve their investment decisions.

Keywords: Investment pattern, investment goal, investment objectives, investment decision & HNIs.

INTRODUCTION

Investment is the commitment of money or capital to gain profitable returns through interest or appreciation of the securities. There are various investment opportunities available for investors to do their investments. It can be in Gold, silver, fixed deposits, real estate, government bonds, corporate debentures, insurance, venture capital, shares, mutual funds, postal savings, chits, commercial papers, treasury bills, bonds and company FD's in India. The investment options like Gold, real estate, chit funds, bank deposits, insurance, and other savings are normally used. Rural investors do not use the investment options such as shares, mutual funds, stock trading and derivatives. Investing in risky securities makes the investors increase their income comparatively more than other investments options like gold, silver and fixed income securities.

According to the current Union budget, India has planned to improve its industrial wealth. So many decisions were taken by the government to encourage entrepreneurial activity in the country. Majority of the population in India is centered around rural and suburban areas and are predominantly engaged in agricultural and other small business for their livelihood. This lifestyle prevents them from taking high risk, this research will provide an insight into HNIs investment pattern for various investment options in Salem district, Tamilnadu.

The simple psychology behind understanding investor pattern has gained importance during the past two decades. Specifically, because investors rarely behave according to the assumptions made in traditional financial and economic theory. Behavioral finance studies the psychology of individual investor's financial decision-making. Early research works carried out were showing the feelings and sentiments affect investment decisions. People in the industry commonly talk about the role covetousness and their concern play in driving investment decisions. Behavioral finance extends this research to the role of biases in decision making of the manufacturing and services sector of HNIs, such as the use of simple rules of thumb for making complex investment decisions.

STATEMENT OF THE PROBLEM:

Research undertaken in the area of investor's pattern of different investment avenues pointed out the fact that three-quarters of Asian adults and two-thirds of adults worldwide are not financially literate and have little knowledge of investment planning. The financial services sector in India is rapidly growing with better and new investment opportunities. The mindset of the people and new mode of investment opportunities acceptance is essential for financial sector industry. Over the past fifty years, established finance theory has assumed that investors have little difficulty making financial decisions and are well informed, careful and consistent; there arises a need to conduct research for investors. Therefore, there is a need to study the investment pattern of high networth individuals in Salem district of Tamilnadu. This research focuses on how HNIs prefer their investment pattern.

OBJECTIVES:

- To study the investment pattern of High net worth Individuals in Salem district of Tamilnadu, India.
- To know the demographic factors which are influencing the investment decisions of HNIs in Salem district.
- To evaluate the investment objectives of HNIs in Salem district.
- To find out the awareness level of HNIs in Salem towards various investment.
- To study the factors which are influencing the investment decision of HNIs
- To offer the suggestions to improve the financial knowledge and investment decision making of HNIs in Salem district.

THEORETICAL FRAMEWORK

Dr. Ruta Khaparde and Anjali Bhute p (2014), analyzed the investor's preference differs on the basis of different variables like age, income, occupation, gender, experience of investing, investment objectives and individual personal needs. The present research explained the investor's perception and attitude towards the impact of macroeconomic performance on investment choices. Gnani Dharmaja .V, Ganesh .J, and Dr. Santhi .V (2012) analysed the most and the least influencing factors of the individual investor behaviour. The research was found that there are also some behavioural factors like the investor's financial tolerance, emotional risk tolerance and financial literacy, which influence the investor's behaviour. Robert et al. (2007) suggested that the results indicate that individual investor's decisions are influenced by physiological tension as stressed individuals are even more controversial and inconsistent in their decisions than other studies revealed. Slovic (1972) explained that people that adopt risky behavior in some scenario may take more risks in investment management. The author makes an understanding that risk-taking behavior increases in groups. Prechter (2001) investigated investor behavior and concluded that it provides a psychological basis for financial product performance. He inserts a very basic human behavior function: 'crowding', based on impulsive mental activity and in response to the actions of others. Bechara and Damasio (2005) promoted a neural structure model in which reaction has an important role in optimum investment decision-making, presupposed to be the result of the joint action of reason and emotion, limbic system and cortex, respectively. Mujtaba Mian and Srinivasan Sankaraguruswamy (2012) this research paper suggested that the stock price movement to

good earnings news is higher during high sentiment periods than during periods of low sentiment, whereas the stock price sensitivity to bad earnings news is higher during periods of low sentiment than during periods of high sentiment. Raluca Bighiu Qawi (2010) suggested that the disparity between a rational approach and behavioural approach both are interconnected. The author also explained the research findings in the area of behavioural finance related to herding behaviour, thought contagion, risk aversion, investor sentiment among others. Additionally, the study argued in favour of an empirical approach to know investor behaviour and biases and the effects of irrational decisions on market performance. Diane and Debra (2003) this research found that investors with education higher than middle level hold more risky portfolios. They also found that the percentage of investment in equity holdings in the portfolio increases with age until retirement and thereafter decreases with age. Dwyer and others (2002) examined gender differences in revealed risk-taking: Evidence from Mutual Fund Investors” investigated whether investor gender is related to risk-taking as broke in mutual fund investment decisions. The author found that women exhibit less risk-taking as compared to men in their most recent, largest and riskiest mutual fund investment decisions. More significantly, it found that the impact of gender on risk-taking ability is significantly weakened when investor knowledge of financial markets and investments. This result suggested that the greater level of risk aversion among women that is continuously documented in the literature can be substantially, but not completely, explained by knowledge differences. Farheen Btool Zaidi (2012) suggested that when investors behave irrationally, they may fall prey to different investment biases, one of which is overconfidence bias and hence they fail to achieve their investment objectives. He also suggested that investors should get the knowledge of these investment biases and should avoid them while making any investment decisions James A.Howard (2012) explains how people really make financial decisions, not at how theory predicts they should make such decisions. Behavioral finance expands our understanding of financial decision making in terms of personal financial decisions and how markets work but also comprises a new instrument in the decision maker's toolbox. Chandra (2008) explored the impact of behavioral factors and investor's psychology on their decision-making, and to examine the relationship between an investor's attitude towards risk and behavioral decision-making. Through this research, the author finds that unlike the classical finance theory suggests, individual investors do not always make rational investment decisions. Brad M.Barber and Terrance Odean, (2001) stated many financial models assume that overconfident investors will trade too much. This paper tested this prediction by partitioning the investors on the basis of overconfidence and gender. The result shows that men are more prone to overconfidence than women. Aman Srivastava, (2007) has focused on analyzing the expectations of the investors about the future performance of the stock market in India and to focus on measuring the confidence that the investors have regarding their investments. He has concluded that the investors make their investment decision with definite behavioural factors. Manish Mittal, (2008) classified Indian investors into different personality types and explored the relationship between various demographic factors and the investment personality exhibited by the investors. The results of this study supported the contention that there are behavioural linkages to the choice of investments. Manish Mittal and R K Vyas, (2007) investigated how the investment choice is affected by the demographics of the investors. The insight of how an investment choice gets affected by the demographic variables helps the financial advisors to advise their clients better. Meenu Verma, (2008) investigated the effect of demographics and personality type on investment choice. The results would help the people involved in the Wealth Management process in

advising their clients better regarding investments that are most suitable according to their demographics and personality type.

HYPOTHESES OF THE STUDY

H1: Demographic characteristics of the HNIs influence investment decisions.

H2: Investment objectives of the HNIs influence investment decision.

H3. Awareness level of the HNIs influence investment decision.

H4: Investment factors influence investment decisions of HNIs.

H5: Investment decisions influence the savings and investment preferences of HNIs.

RESEARCH METHODOLOGY:

Research Design

The research design adopted for the present research is descriptive in nature. It describes the characteristics of high networth individuals in Salem, Tamilnadu is considered. A descriptive study is used to describe the characteristics of different variables. This study is focused on bringing out the various variables that influence HNIs investment preferences. In order to achieve the objective of this study, a structured questionnaire has been developed based on a comprehensive review of the literature. Most questions placed in the questionnaire were of closed-ended type. Most questions required the respondents to assign a score rating on a seven-point Likert scale.

Pre-Testing and Pilot Study

The questionnaire prepared for the respondents has been pre-tested by the researcher in person. Comments on the questions were noted and after careful analysis, necessary modifications have been made in the questionnaire. After pre-testing, a pilot study was conducted among 100 respondents. Confirmatory Factor Analysis was used to check the reliability and validity of a group in the questionnaire. Reliability of 0.7 (Cronbach alpha) demonstrates sufficient instrument reliability for data collection. The results of the study are demonstrated in the following construct reliability table.

Table. 1 Reliability analysis result for the Pilot study

Construct	Reliability (Cronbach's alpha)	Remark
Investment Objectives	0.823	Sufficiently reliable
Investment Awareness	0.928	Sufficiently reliable
FIID	0.871	Sufficiently reliable
Savings and Investment pattern	0.814	Sufficiently reliable

Study Setting

The study was conducted in a natural environment, that is, in non-contrived settings. No extraneous factors were controlled.

Unit of analysis

Since the study aims to analyze the savings and investment preferences of HNIs in Salem district, the unit of analysis is 'individual'. The data collected from each individual is treated as an individual data source.

Time Horizon

The duration of the research is 4 years beginning from 2014-2018. The variables, which influence the investment preference of investors in manufacturing and services sector in Salem district have been noted and analyzed.

Sampling Technique

The sampling technique adopted is simple random sampling. The simple random sampling is a sampling technique used when "natural" groupings are evident in a statistical population. The data is collected from the elements within each selected investors group. This may be done for every element in these groups or a subsample of elements may be selected within each of these groups.

Statistical Tools Used

- ✓ **Multivariate Regression analysis**
- ✓ **Analysis of Variance (ANOVA)**

LIMITATIONS OF THE STUDY

The research had the following shortcomings

- ✓ The number of observation was limited to 300 respondents. The total number of investors in various sectors might be very large in Salem, Tamilnadu. The revalidation of the construct was not carried out for other data set. So the instrument used in this research needs to be revalidated in further studies in other areas.
- ✓ This research did not consider other dimensions of behavioral finance (Psychological scale) affecting the investment pattern of HNIs. These dimensions are left for further research.
- ✓ This study concentrates on all income groups rather than focusing on specific income groups.
- ✓ Due to limited time and tedious data collection needed for each questionnaire, only 300 questionnaires were collected from HNIs of different sectors in Salem, Tamilnadu. High Networth Individuals in other cities were neglected. Also, its scope is limited to Salem district which forms only a part of Tamilnadu, the results may not be valid elsewhere

ANALYSIS AND INTERPRETATION**Table 1.1 One-way ANOVA test result for demographic factor and investment needs of the HNIs.**

	Age	Gender	Edu	Income	Occu	Bus. Exp	Family Type
Business Needs	.000*	.000*	.000*	.000*	.042*	.000*	.009
Purchase of assets	.000*	.000*	.000*	.000*	.000*	.000*	.000*
Tax Benefits	.000*	.268	.000*	.000*	.003*	.012*	.049
Education of Children	.017*	.048*	.000*	.000*	.000*	.000*	.000*
Family Functions	.000*	.009*	.000*	.000*	.000*	.000*	.012*
To Meet Contingencies	.038*	.002*	.000*	.000*	.028*	.150	.833
Gifts, donations and pilgrimage	.160	.000*	.000*	.000*	.854	.003*	.001*

From the above table, shows that the age of the HNIs have a significant influence on investment needs/goals expect gifts, donations and pilgrimage. The gender of the HNIs influences on investment objectives of HNIs excluding tax benefits, the educational qualification and annual income of the respondent's influences on all the variables in the investment needs. Occupation of the respondents has an influence on investment needs except for gifts, donations and pilgrimage expenditure. The business experiences of HNIs influences on investment goals expect to meet contingencies and the family type of respondents have an influence on investment goals except to meet contingencies expenditure.

Table 1.2 One-way ANOVA test result for demographic variable and investment objectives of the HNIs.

	AGE	Gender	Edu	Income	Occu	Bus. Exp	Family Type
Less risky	.000*	.012*	.000*	.000*	.000*	.005*	.000*
Minimisation of loss	.000*	.048*	.000*	.001*	.008*	.000*	.048*
Stability in returns	.000*	.000*	.000*	.000*	.229	.000*	.035*
High average return	.000*	.015*	.004*	.001*	.000*	.000*	.018*
High short term returns	.229	.412	.000*	.015*	.007*	.000*	.123
High long term returns	.000*	.000*	.000*	.133	.000**	.000*	.000*
Tax savings	.070	.006*	.002*	.001*	.031*	.001*	.001*
Volatility	.000*	.679	.000*	.000*	.001*	.243	.503
Liquidity	.000*	.377	.000*	.000*	.041*	.000*	.430
Speculation	.000*	.289	.096.*	.001*	.000*	.000*	.027*

From the above table, it can be inferred that the age of high net worth individual influences on investment objectives expect a high short-term return. The Gender of the respondents does not influence high short-term returns, volatility, liquidity and speculation. The educational qualification of the HNIs does not influence on speculation. The annual income of the respondents does not influences on high long term returns. The occupation of the respondent's influences on investment objectives expects stability in returns. The business experience influences on investment objectives except for volatility. The family type of respondents does not influence on volatility and liquidity.

Table 1.3 One-way ANOVA test result for demographic variable and factor influence on investment decision of the HNIs.

	Age	Gender	Edu	Income	Occu	Bus. Exp	Family Type
Family members	.000*	.141	.000*	.000*	.000*	.000*	.000*
Spouse	.000*	.022*	.000*	.000*	.000*	.260	.000*
Friends/ Colleagues	.000*	.002*	.082	.000*	.000*	.000*	.000*
Electronic media	.000*	.031*	.000*	.000*	.000*	.000*	.000*
Print Media	.000*	.000*	.000	.000*	.000*	.000*	.320
Awareness programmes	.000*	.028	.000*	.000*	.000*	.000*	.000*
Consultant/Investment Advisor	.000*	.030*	.000*	.000*	.000*	.000*	.000*
Others	.000*	.000*	.000*	.000*	.000*	.000*	.160*

From the above table shows, that the age of the respondent's influences on investment decision. The gender has an influence on investment decision except for friends/colleagues and awareness programs. Education qualification of the HNIs have a significant influences on their investment decision expect print media. Income and occupation of HNIs have a high influence on their investment decision. Business experience of the HNIs influences on their investment decision except for spouse and family types of the respondent's influences on investment decision.

Table 2.1 Investment preference of HNIs in Salem.

	Frequency	Percent	Rank
Fixed Deposits	13	10	4
Gold / Silver	29	17.7	3
Real Estate	11	20.7	2
Insurance Policies	12	4	8
National Saving Certificate/ Public Provident Fund/ Provident Fund	21	4.3	7
Mutual Funds	62	7	6

Debentures / Bonds	53	3.7	9
Shares	30	9.7	5
Venture Capital	69	23	1
Total	300	100	

From the above table, it can be inferred that 23 percent of the respondents preferred the venture capital for their investment. 20.7 percent of the HNIs have selected real estate for their investment. 17.7 percent of the respondents preferred gold/silver investment option. 10 percent of the HNIs have chosen fixed deposit. 9.7 percent of the respondents preferred shares. 4.3 percent of the HNIs preferred national saving certificate/public provident fund and followed by insurance policy & debentures/bonds.

STRUCTURAL EQUATION MODELING

A construct level correlation statistics were used as a primary check among the four hypotheses. Visual PLS 62Bit software is used to calculate the construct scores. These scores are checked for significant correlation using SPSS package. The correlation scores are mentioned in table 3.1. It is seen that all the constructs are significantly correlated. The investment goals, awareness of investors, factors influences on decision-making and investor's investment and savings pattern have highly positive correlations.

Table 3.1 Construct level Correlation Analysis

Hypothesis	Independent Variable	Dependent Variable	Pearson Correlation	Sig. (2 Tailed)
H1	Investment goals	Investment Awareness	0.529	0.000*
H2	Investment goals	FIID	0.491	0.000*
H3	Investment Awareness	Investment Pattern	0.498	0.000*
H4	FIID	Investment Pattern	.756	0.000*

***Correlation is significant at 5 percent level**

Although the bivariate correlations are highly significant for most hypotheses when considered in pairs, it is still required to check whether they are still significant when the constructs put together are in a structural model as a causal effect. An in-depth test of the significance of various proposed relations can be tested using the bootstrap function in Visual PLS. PLS path modelling is a non-parametric method, and as such, it cannot be used for performing a t-test. But it is possible to use resampling methods (bootstrap and jackknife) to obtain the significance of the various paths in the model (Efron 1979; Efron and Gong 1983).

Bootstrap is more reliable in estimating the significance of paths. Therefore, this research has considered and used bootstrap for determining causal relations proposed in the model. The bootstrap used in this research, random samples size 87 from Madurai (the respondent number) was taken. The results were tested for significance. At 5%, level of significance the

cut off- t-statistics is 2. In general, it is assumed that if the t- statistics is more than 2, the path is significant.

H1: As the investment goals increases, the awareness of HNIs investors also increases.

The relation was found to be highly significant (Beta= 0.58, t= 12.342. The R square value is also positive (0.34). This reinforces the theory that the investor's goals will be forced to create an awareness of investment to HNIs in Salem district. It also exhibits that the HNIs investment goals were consciously increasing and were sensitive to its change in a positive way. Therefore, the investment goals of HNIs is resulting in creating an awareness of HNIs in their investment pattern.

H2: The HNIs investor's goals increases, the factors influences on investment decision also increases.

The relation was found to be positively significant (Beta = 0.32, t = 15.334). The R square value is also high (0.41). The result confirms the theory that if the HNIs investment goals will increase the factors influences on investment decisions in their investment pattern in Salem district

H3: As the awareness of HNIs investors about investment increases, the savings and investment pattern also increases.

The relation was found to be highly significant (Beta = 0.38, t = 6.734). The R square value is also sufficiently high (0.41). The significant t value exhibit that HNIs investors' awareness about Investment Avenue will provide better savings and investment pattern.

H4: As the HNIs investment decision increases, their savings and investment pattern also increases

The relation was found to be positively significant (Beta =.38, t =17.878). The R square value is also positively high (.41). The significant t value shows that the HNIs factors influences on investment decisions will provide better savings and investment pattern of HNIs in Salem district.

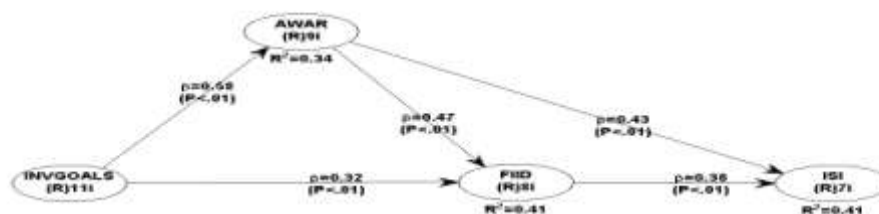


Figure: 1.1 Structural Equation Model.

Terms Used in Model

- IG** : Investment goals
- IA** : Investment Awareness
- FIID** : Factors influences on Investment Decision
- ISI** : Investors savings and Investment Pattern

Table 3.2 Bootstrap Summary



Structural Model—BootStrap							
		Entire Sample estimate	Mean of Subsamples	Standard error	T-Statistic	R-Sq Value	Result
	IG->IA	0.5290	0.5525	0.0543	12.342	.34	Significant
	IG->FIID	0.4910	0.5287	0.1200	15.334	.41	Significant
	IA->ISI	0.4980	0.5413	0.0963	6.734	.41	Significant
	FIID-> ISI	0.4960	0.5329	0.0976	17.734	.41	Significant

Table 3.3 Composite reliability and Cronbach Alpha in Salem.

Reliability and AVE			
 Construct	Composite Reliability	AVE	Cronbach Alpha
IG	0.845312	0.689544	0.843351
IA	0.975731	0.532190	0.976854
FIID	0.868901	0.588912	0.867432
ISIP	0.875985	0.539076	0.287667

From the above table, it is clear that the composite reliability of all main constructs is more than .66, which presents highly reliability. The AVE value of the HNI investment goals and HNIs savings and investment both are more than .5. The validity of all the constructs showing good convergent validity even though the usage of investment tools and stock selection are less than .5.

FINDINGS

- From one-way ANOVA tests, demographic factors like age, gender , educational qualification, occupation, Annual Income, Business experience ,Occupation and family type of the respondents have an high influences on investment goals such as

business needs, purchase of assets, tax benefits, education of children, family function, to meet contingencies and Gifts, donations and pilgrimage. Age & Occupation does not influence on Gifts, donations and pilgrimage variable because of high networth individuals financially sound. So they do not want to invest money for Gifts, donations and pilgrimage expenses. Business experience and family type do not influence on to meet contingencies that mean the HNIs have sufficient amount of funds to meet their contingencies. It is clearly shown, that the HNIs investment goals are based on their business, purchase of assets, tax benefits, education of children.

- The age, gender, educational qualification, occupation, business experience, annual income, business experience and family type of HNIs have a significant influence on the majority of the variables of investment objectives of HNIs in Salem. Age, gender and family type of the respondents does not influences on high short-term return. It's clearly stated that the HNIs prefer their investment avenue for long term, not for short-term. Gender does not influences on volatility, liquidity and speculation. Its means that the part of HNIs have worried about the volatility, liquidity and speculation. The female investors due to lack of financial literacy are not convenient with volatility, liquidity and speculation activities. They do not want to take more risk for their investment. Occupation does not influence on the stability of return. Its shows that HNIs business nature plays an important role in their investment. The family-type does not influence on volatility. Its shows that the family background influences HNIs to choose their investment mode.
- Majority of the demographic variables of HNIs have on the high influence of family members, spouse, colleagues/Friends, electronic media, Print media, awareness programs, opinion leaders, and financial consultants. Gender does not influence on family members. This shows that male HNIs do not consider their family advice for their investment. Family type of the HNIs does not influence on print media. Its shows that the HNIs are using advanced information technology to know more about investment options.
- According to frequency analysis, majority of the high networth individuals are preferred venture capital is a most important investment option and followed by real estate, gold/silver, fixed deposit, shares, saving schemes/provident funds, insurance policy & debentures/bonds. Its shows that the HNIs in Salem are expecting high return as well as safety and liquidity. The HNIs wants to invest more funds for further business to meet their future needs. The HNIs are expecting fixed income. So, they are preferring fixed income securities. The HNIs are interested to invest money in gold, silver and fixed deposit. It clearly exhibits that the gold, silver and fixed deposit returns are not sufficient for them to meet their future needs.
- The structural equation model shows that the investment needs/goals influences on investment objectives. The investment objectives of HNIs influences on investment awareness of HNIs. The HNIs investment awareness influences on investment decision. Its shows that the HNIs investment pattern based on their investment goals, objectives, awareness. There is a direct relationship among the investment needs, objectives, awareness and decision-making constructs.

CONCLUSION AND RECOMMENDATIONS

The results indicate that the HNIs investment goals influences on awareness of HNIs investors about investment avenues, the NNIs awareness about various investment avenues influences on factors influences on investment decision and savings and investment pattern. The HNIs investment decisions influences on savings and investment pattern of HNIs in Salem district. The analysis also exhibited that investor's awareness and investment decisions have stronger influences on their savings and investment pattern than other factors. The investment goals of HNIs also seems to have a strong impact on HNIs investment decisions. Majority of the respondents are male compared to female. Females are conservative about their investments and they prefer to invest in Gold or Silver. It is less risky in comparison with other investments. Based on this research, HNIs prefer highly risky investment avenues for their business needs. Therefore, the government can give awareness about the risky mode of investment avenues for their better investment. They can also consult with financial advisors to invest more in venture capital and real estate, gold/silver & fixed deposit. They can also invest more in Government securities and bonds, which are less risky. They can also invest in tax benefits fixed deposits and other financial instruments which gives them regular interest.

Investors who lack financial knowledge and investment awareness should update themselves with investment preference blogs. Now we are in the technology world. Since the HNIs can get more information about various risky investment avenue through media. They can also attend various seminars, which is conducted in their respective cities to gain more knowledge of investments. They can invest in the equity market and derivatives market as an investor not as a speculator. Awareness about investment in various avenues that give long- term returns should be made since most of the respondents opt for assets that give high short term returns. They must be made aware of various benefits involved in long term return yielding investments

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“Role of Innovative Practices and Employee Engagement in the Modern Organization”

Ms. Rima Alagh

Asst.Prof. DIRD, GGSIPU, New Delhi

Abstract:

Co-creation through innovation is the new mantra in today's business. Organizations are looking to engage employees across the globe to efficiently create new products, and processes.

However, to realize these possibilities organizations need to first connect their employees in a manner that will enable them to co-create effectively. Co-creation, in turn, leads to better innovation, which, eventually, paves the way for organizational growth. Business platforms play an important role in enabling such an environment through best practices, organizational fabric (policies, change management, etc), technology, and business services – all delivered on the Cloud.

Studies have consistently shown that engaged employees are more active contributors to an organization's growth. So, how do organizations create a vibrant and collaborative environment that bridges borders and cuts through time zone limitations? How can an organization connect employees on an ordinary platform and give them the resources to collaborate and innovate? How can employees express and discuss their thoughts and ideas and get a chance to participate in formulating strategy or taking decisions?

Key Words: Engagement, Leaders, Innovation, Leader Energy and Engagement

Introduction:

By listening the word engagement, we may think of long-term commitment, marriage, diamonds, family, and celebrations, however, now the word is associated with one of the trendiest topics in management. Everyone rushing to be on their way to getting their employees engaged. The claim has been made that engagement is required for higher levels of firm's performance, and studies estimate that only 14 percent to 30 percent of employees are engaged at work. But till now, despite a hike in interest in improving engagement, people still differ about what employee engagement is, how to go about achieving it, and what it looks like when it is achieved. Moreover, with all the consideration given to reported levels of low employee engagement, there are few if any statistics on what an accurate level of engagement should be for employees' overall and for various subgroups of workers. In reality, very little significance has been given to the engagement levels of the people running businesses, the leadership and management teams. Regardless of what description of engagement is used, if it is something organizations are trying to do to employees rather than an excellence that leaders are demonstrating through example, the interventions linked with engagement will fail.

Literature and Empirical Review

The concept of employee engagement was given by Kahn (1990) in his research work on summer camp employees and also employees working in an architecture firm. Published literatures present several definitions of this term. Each and every definition represents unique perspectives of the time, context and field, the disjointed approach to defining employee engagement has posed misinterpretation (Shuck & Wollard, 2010). However from a

broad view, employee engagement is defined as a different and exclusive construct that consists of cognitive, emotional, and behavioral components that are linked with individual's performance (Shuck, Rocco & Albornoz, 2011). Fleming and Asplund (2007, p. 2) defines employee engagement as, "the ability to capture the hearts, heads, and souls of your employees to inculcate an intrinsic desire and passion for excellence".

Abraham (2012) explain employee engagement as an amount to which workers feel job satisfaction and an emotional connection to the achievement of their organization while Kahn (1990), describe it as the harnessing of organization members to their work roles resulting to them being psychologically present when occupying and performing an organizational role. Harter, Schmidt and Hayes (2002) describes it as the individual's involvement and satisfaction as well as zeal for work while Schaufeli et al. (2002; 2006) described it as job-related state of mind that is characterized by vigor, dedication, and absorption. Sundaray (2011) emphasized the cognitive, emotional & behavioral elements associated with employee engagement. According to him, cognitive engagement is personnel's beliefs about the company, its leaders and the office culture. The emotional aspect of it is how employees feel about their company, their leaders and their colleagues while the behavioral factor is the value added component revealed in the amount of exertion employees put into their work (Lockwood, 2007).

The HR practitioners have globally been very vocal on the need for organizations to devise strategies of ensuring that employees are engaged at the workplace for organizational performance excellence.

Why employee engagement does matters

The engaged employee goes the extra mile. Every employee has potential that extends ahead of their job description. But the engaged employee will tap into his or her potential, works with passion, and finds new challenges and opportunities that will drive success for the company as a whole. He is the salesman that is learning code in his spare time, the customer service representative that follows up with a customer to make convinced their package arrived in time for the holidays, and the web developer that works hours into the night on a new app.

The engaged employee drives improved business outcomes. According to the Workforce Research Foundation, engaged employees are 38% more expected to have above average productivity, and customer satisfaction can increase by 12%. Companies with engaged employees will always outperform those without by up to 202%.

The engaged employee aligns his career goals with those of their organization, which results in innovation in processes, products or services that impact customer satisfaction. Employees who are with a company's overarching goals dedicate their personal resources (think brain power) in bettering themselves and their company. If this type of entrepreneurial freedom is provided by leadership, the results are win-win situation.

Engage your employees and create great products

There's no such thing as a constitution for creating an engaged workforce. What works for one employee may prove fatal for another.

Leader Energy and Engagement To provide the surroundings where employees can be doing well in both the core job and the non-core job roles, a few things are required:

- Leaders themselves have to be engaged; they need to work and be successful in both their core job and non-core job roles.
- Leaders need to clearly define how each role helps support the business strategy and plan.
- Leaders have to create an environment where the other than core job roles are valued, and they must remove barriers to employees' working in the noncore job roles.

These three conditions for engagement are not at all easy for leaders to meet. The work environment in most organizations is becoming more and more stressful, with employees not being able to do their core jobs in 60-hour work weeks, and leaders themselves are becoming burned out, puzzled, and disengaged. This is not a ripe environment for engaging employees or leaders.

For example, here are some quotes from a group of employees reporting to a manager whose own energy levels are suboptimal, little, and declining: "Workload is not evenly distributed." "Too much work and not enough time to get it done." "The pace of my work is too much." "I don't know how to use up my time; I have too much to do." "I need help." "There are not sufficient resources to get the job done." "Many of us are just burned out." "We have no idea what the approach is or where we are going." "There are not enough communications."

Leadership teams that want to kill employee engagement and initiative should simply tell employees that they can't do something "because that's not how we do it here" or "because we've done that earlier" or "because management will never understand that" or "because it isn't rule."

This type of "because" culture eventually maintains the status quo — and the status quo just doesn't breed creativity or innovation. Companies usually fail when they stop changing their product or service, become content, are afraid to fix what isn't yet broken, worry about the investment required for innovation, or worry about chances of failure.

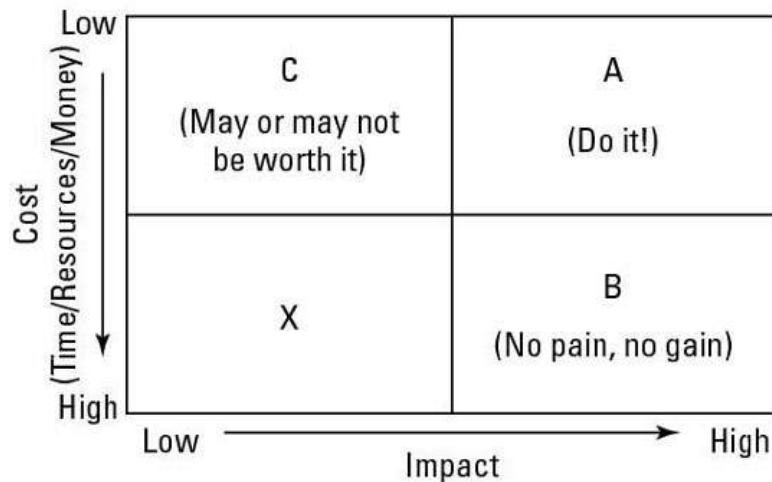
If your company has a "because" culture, odds are, it's lacking in innovation, empowerment, and engagement. This type of firm's growth will be lower than its peers, client satisfaction levels will be lower than the industry average, and employee turnover is higher than the competition. You're also most likely retaining only your marginally engaged employees.

Instead of a "because" culture, why not try for a "why not?" culture? Instead of rejecting employees' ideas "just because," give them a whirl, just to see what happens. Even better, look out for those ideas.

Sure, you'll have some failures, but you'll also have some hits! Continuous improvement is about challenging the norm. Besides, listening to employees, allows them to become even more comfortable about expressing their thoughts and ideas, which naturally increases their level of engagement with the organization.

Of course, not all ideas will be winners. For some understanding on which ideas to pursue and which have to be set aside, check out the idea priority matrix in the following figure. As you can see, it favors ideas that are economical and have high in impact over all others.

Idea Priority Matrix



The Leader and Employee Engagement Challenge Many a time leaders will be creating or are in an environment where employee engagement will be very challenging to achieve. When leaders are working at suboptimal energy level, and when they have a difficult time merely getting their own jobs done, they will not value anyone engaging in the non-core job roles. The type of environment leaders are discussing in the leadership project is not contributing to high levels of employee engagement. That's why having a strong definition of what engagement looks like is so important for leaders. The organization must provide an environment where people who move to the engaged state are rewarded for what they are doing. In a company where everyone is reporting being overworked, employees and managers will not tolerate time spent in the job role not of core nature even if a logical argument can be made for how that effort will benefit the organization in the long run. In summation, the leadership pulse data reports a large proportion of leaders are not perfectly energized at work, and the cause for the same seems to be related to workload and a heavy focus on the core job role. Employees usually do not expect their employers to be loyal to them, they do not want to be in the same job for life, and they are always willing to leave their company as and when a new opportunity arises. In this highly complex environment, we need to ask some hard questions:

- Should anyone be surprised that only a small majority of employees are reporting being "engaged"? The employee contract was changed in ways that mean employers should have anticipated disengagement well in advance.
- Can anyone practically expect to raise "engagement" when there are no connected rewards?
- Should we expect to develop employee engagement if they are working for leaders who are having problems stimulating themselves at work?
- Can employees or leaders afford to find time after finishing their job role when there are so many pressures on simply getting the job done?
- If the leadership team has no time left for engaging in anything other than the core job role, why would they rate non-core job role-based performance from their own employees?

Summing up, one could speculate that the millions of amount being spent on employee engagement programmes may be wasted when the context for employee engagement does not exist. To change organization's performance through people, a significant effort must begin with the leadership team. The leadership team must engage themselves, they need to understand what it looks like to engage people at work, and they must prove to be role

models for this behavior with their direct subordinates, who then do the same for their employees.

Suggestions for Success

Improving work conditions for employees and leaders so that they can engage in both core and non-core job roles both are important goals for firms that want to gain a competitive advantage. If we define 'engaged' employees, they are those who work and succeed in the non-core job activities, then a systematic approach to employee engagement would not start with an all-employee attitude survey (as has been done in many engagement programs). Instead, it would begin with the leadership team. Here are some suggested actions leaders can take to ensure that the people in charge of engagement are engaged themselves and that their organization has an atmosphere that can support employees' contributing to efficiency in a way that is defined by the role-based model:

- Conduct a business analysis to find out what roles are really appreciated in their organization and what roles are needed to attain business plan objectives. This analysis should lead to identification of any gap in common understanding of how employees should be allocating their time and effort and what is rewarded in the organization.
- If the non-core job roles are not appreciated (by the managers who interact with personnel daily), analyze the types of structural and strategic modifications required to align the organization so it can compete effectively.
- Determine what leadership education is necessary to create a culture where both core job and non-core job roles are appreciated and rewarded.
- Examine in detail what structural impediments may occur to spending time in the non-core roles. These can be formal processes such as performance management systems that only focuses on the job.
- Determine the ways in which the various roles need to be enacted throughout the year. The importance of roles may vary based on seasonality of the industry or work demands; they also may vary for various occupations. This type of detailed understanding is required to assure continuous alignment.
- Engage employees in the right roles and at the right time. Conduct assessment study to understand the determinants of engagement in the various roles as opposed to engagement altogether.

Using this data, you can develop interventions to help retain employees who are interested in engaging in both the core job and non-core job roles. Organizations need more engagement at work. Organizations need leaders, managers, supervisors, and employees who will take time to go above their core job roles if the business is to remain successful in the competitive global economy. However, employers cannot expect a magic formula to make employee engagement happen. It will be a long journey that starts at the top end of the organization and moves its way throughout the business.

Here are some outstanding examples of firms that are taking innovative actions to make their employee engagement activities significant and successful.

1. Zappos: "The offer"

Zappos online shoe store frequently shows up on Best Places to Work lists. The secret to its hyper engaged workforce? A commitment to company culture. Receiving over 55,000 employment applications a year, this organization is scrupulous about hiring the right people and more importantly, keeping them for long time.

Candidates who pass the long interview process that includes numerous phone and in-person interviews are enquired to attend lunch and happy hour events to see if they're a good fit with the Zappos "family" and culture.

After four weeks of onboard training, new recruits are made an uncommon offer: a \$3000 payout to leave. According to Zappos, 2-3% of trainees have taken the offer since the initiative was rolled out.

Why it works: Engagement and culture are synonymous at Zappos. The company have clear understanding about what their culture is and what they require to do to maintain it. They have defined their core company's values and focuses on retaining the people who will share and uphold those values. It may take long for this organization to hire a new employee, but they are quick to let go people who don't fit the given profile.

2. Reebok: "Cross-Fit Box"

Reebok was looking to reinforce its new mission "to get consumers moving." They figured the finest way to do that was to firstly get their employees in motion. In an effort to align their people with their specified vision, the athletic apparel brand has recently converted one of their warehouses into a Cross-Fit workout center, wholly for Reebok employees.

Participants jointly lost over 4000 pounds during 2011. Globally, 1000 Reebok employees are now CrossFitters.

Why it works: This creativity helped build engagement on many points. Reebok didn't just sell a lifestyle, it lived it. To deliver the full customer experience, the organization promoted a culture of health and wellness within it, making employees as stakeholders in the company's vision and mission.

3. FullContact: "Paid, paid vacation"

FullContact, a contact management API development firm, offers a inspired environment with tons of thrilling benefits and programs. The one that stood out most for us is the "paid paid vacation" incentive: once a year, each employee is given \$7500 to go on vacation.

The catch? There are some rules, but we think most people would be happy to oblige:

- 1) You will have to actually take a vacation to get the money.
- 2) You will have to disconnect from your usual work — meaning no calls, emails, social media updates.
- 3) You can't be able to work while on vacation.

Why it works?: The company's CEO, Bart Lorang, emphasized that time to disconnect is absolutely necessary for the health of employees and the company. Here's an extract from his blog post speaking about why the company offers "paid paid vacations":

"If people know they will be separating and going off the grid for an extended period of time, they might actually keep that in mind as they help build the company.

Employee engagement actions that get employees to say "I do"

Employee engagement is a tactical tool that can add real value to top-line growth and bottom-line performance. But when your attempts to engage employees are erratic, and don't have real meaning or value, they negate good intentions.

It is now clear that if an organization wants to promote an engaged, productive workforce it has to first determine key aspects of itself:

- Does your company have a clear mission, vision and values?
- Does your organization live by these values?
- Are these values being actively promoted in your organization?
- Does your company align its vision, people and processes?

Conclusion:

Employee engagement has to be approached and known as a process. A process that instigates with identifying the correct performance metrics, noticeably communicating expectations, giving context and purpose for these expectations, providing the tools and training to achieve objectives, and finally, development opportunities for every leader, manager, and employee that will help them achieve their goals and strive for mastery.

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Making MIHAN a success story for Vidarbha - A White Paper on MIHAN project

Atul R Thakare,
PhD Scholar

Abstract:

For the past few years, the real estate market in Nagpur and Maharashtra is buzzing with India's one of the most ambitious infrastructure project – Multi-modal International Cargo Hub and Airport at Nagpur (MIHAN). The investment of this project is considered as the biggest economic development process. The main aim of this project is to restructure the Nagpur airport enabling with cargo facility and connecting with railway and integrated roads in the city of Nagpur. The project is also touted to bring some of the best companies in IT, Healthcare and aviation to change the face of Nagpur. But has the project materialized in the last two decades as expected? If not, what can be done to make it a success story for the Vidarbha, that is otherwise considered as backward region in Maharashtra.



Keywords: MIHAN, Nagpur, Vidarbha, MRO, Food Park Nagpur, IT Park etc.

Introduction:

At an exposition in Mumbai last week, while exchanging business cards, the old card was given to a delegate by mistake. The person enthusiastically enquired, if I was associated with MIHAN? I apologized him for the old business card and informed that I used to work as the Marketing Manager for MIHAN project previously. The person was a native of Vidarbha region, so he immediately asked about MIHAN's progress and my experience at MADC, the company that executes MIHAN project.

As an answer to his question, I could only say, 'MIHAN is still taking off because of the various business management challenges'. And rightly so, MIHAN is a classic case study of how ambitious government projects should not be managed.

MIHAN is the project being executed by a special purpose vehicle (SPV-Company) named MADC (Maharashtra Airport Development Company) whose name is always confused as MIDC, the industrial development corporation for Maharashtra state. Barring few people

nobody recognizes MADC, as no major airport is developed by the company except Shirdi. However, MIHAN is a well-known phenomenon for the people residing in Nagpur, as it is synonymous with the development of Nagpur in terms of employment and opportunities for business.

History:

MIHAN project's genesis goes back to the pre independence era, during 1936, when the British rulers wanted to have a cargo hub for India at Nagpur, since Nagpur lies in the geometric centre of the country. The cargo hub would be able to cater both the defence as well as civilian aircrafts. However, before the plan could be executed World War II started in 1939 and by the time the war ended, India got independence from the British rule. But Nagpur remained the epicentre of India's Air mail and cargo systems for long time. In mid-nineties, the project saw its re-birth due to the initiative of few ambitious Nagpurians. MIHAN started with a great fanfare in early 2000 era and was touted to be the game changer for Nagpur. It was the first Special Economic Zone (SEZ) with an Airport next to it. (Now a couple of other SEZs also have airport attached). However, MIHAN was one of the first smart city project to uplift the face of Nagpur and could match the development in other cities like Pune or Navi Mumbai.

But an ambitious project like MIHAN with huge expectations and great potential could not take up as expected apparently due to administrative inability. Very few officers who have been at the helm of it are actually aware about how to get the business. The first Managing Director was a visionary and had all the authority to drive this project. He had a good association with everyone in the government (across political parties), so he could get the funds for building infrastructure. However, the team under him was lacking authority and ownership. Most of the officers working at MADC were recruited as consultants from Public Works Department (PWD) after retirement. They lacked motivation and accountability and were never given the power of decision making. But as they say, power corrupts and absolute power corrupts absolutely, the VCMD was unceremoniously removed from the position after some irregularities came to light in the ambitious housing complex and the power project in MIHAN. After the ouster of first MD, the team could not provide proper inputs to the new bosses, instead every officer thought that he is the boss. This has reduced the project to a white elephant, on paper.

Scope of the Project:

MIHAN is supposed to be one of the largest economic development projects underway in India. A consortium led by L and T Ramboll Consulting Engineers was asked to undertake a techno-economic-feasibility study for the project in 2004-05 (the study supported the project). The project was designed to make the most of the central location of Nagpur and to convert the airport into a major cargo hub with multimodal integrated road and rail systems. The project consists of two parts: the international airport acting as a new cargo hub; and a special economic zone of 2,086ha with an accompanying residential and commercial zone covering a total area of 40.25 square kilometers on the southern end of the city of Nagpur, adjacent to the airport.

The Government of Maharashtra formed a special purpose entity called the Maharashtra Airport Development Company (MADC) to mediate in the development of the MIHAN project. The project was financed by Indian banks with a total loan amount of Rs7 billion, and an investment from the state government and the Airports Authority of India. The

projected target for the airport was to serve 14 million passengers (later reduced to 7 million passengers per annum) and handle 0.87 million tonnes of cargo by 2025 (handling 50 aircraft a day).

The water supply and sewage system for the airport was constructed by Kirloskar Consultants and Nagarjuna Construction, and completed in August 2010 at a cost of Rs2.41 billion. The Rs1.90 billion road network was built by SPAN Consultants and the PBA Sadbhav joint venture, and was finished in 2010. The Rs750m rail bridge and interchange was completed in 2010 by Consulting Engineering Services India and AFCONS Infrastructure. The stormwater system was completed by SPAN Consultants and PBA Infrastructure in 2010 and the power infrastructure was installed by Mott MacDonald and Jyoti Structures. The project central facility building was built by Larsen & Toubro (ECC Division) and Shapoorji Pallonji. The fire station was carried out by Prasad & Associates and Yeses Infrastructure.

Till date, MADC has already spent more than Rs 1000 crore in developing basic infrastructure like roads, street lighting, water, a captive power plant and so on.

Airport Infrastructure:

One of the major aspect of MIHAN is the expansion of the existing 10,000 sq. mtr terminal building of Nagpur Airport with two parallel runways. The project will cost Rs790 million and will cover the addition of a new terminal building catering the needs of 6.9 Million domestic and international passengers annually. The present terminal section is a steel and glass structure opened in April 2008. Its facilities include central air-conditioning, passenger boarding bridges with visual docking guidance system, escalators, lifts, a baggage conveyor system in arrivals and departure hall, CCTV and FIDS. The two new aerobridges became operational in 2011.

Human Resources:

The officers or staff working in the different departments of MADC, particularly with MIHAN project sadly works in different directions:

Land section: It is only concerned about the land acquired for the project, irrespective of whether it is needed and for what purpose. The major task is to address the issues of the project affected persons(PAP).

Engineering Section: It is solely focused on the maintenance of infrastructure works as the most important aspect of the project, because the whole MIHAN project itself is being treated as infra project. It is noteworthy to mention that all the infrastructure projects are executed through various agencies and the officers and staff from this section are there to co-ordinate with the consultants and agencies.

Town Planning Section: Fully focused on the plan sanctioning aspect irrespective of the market dynamics.

Marketing Section: The name of this department is confusing, as there is no focused marketing except maintaining investors and public relations. Facilitating Allotment of land is the key aspect of the section, irrespective of the market behavior.

Electricity and Water: These departments are busy in keeping the companies in MIHAN on their toes due to the dynamic pricing of water and electricity. Since MIHAN is like a smart city project, electricity and water supply are the basic infrastructure, however at MIHAN the Power plant is completed but is unable to provide electricity due to the threshold and similar issues are with the Sewage Treatment Plant and Tertiary treatment plant.

Current Status:

MIHAN project is definitely big and ambitious in terms of infrastructure and logistics; as the total area it occupies in more than 4000 Hectares. But it is a market driven business project which unfortunately the bureaucracy has always ignored. Or if they have acknowledged, not tried to implement it in that manner. I had got an opportunity to work with MADC a little over 5 years and was very fortunate to get associated with the project during the time when the Managing Director of the company was of the rank of Former Chief Secretary. I consider it as my privilege to be a part of this project and contribute in the development of Nagpur. Being a Nagpurian, it was easy for me to connect with the local public, government officials and local industry. However, the land prices in the SEZ as well as the industrial area outside SEZ are slightly on the higher side, when compared with the developing regions like Telangana, Chattisgarh or Madhya Pradesh. The gamble played by the state government by increasing the land rates to mitigate the loss of revenue due to offering cheap land to Patanjali has not reaped any benefit so far. Rather the Public Interest Litigation on favoring Ramdeobaba and the transfer of RTI officers gave negative publicity to the project. Neither the Patanjali Food park has been able to employ the locals of Nagpur so far nor MIHAN could take off, as expected. Few government institutions like IIM and AIIMS have started construction of their campuses in MIHAN, but that's it.

Presently, the MIHAN project office has become a rehabilitation centre of retired govt. employees with good political backing. Nobody except couple of officers understood that it is a business project and so it has to be implemented in a professional way. However, still the retired govt. officers kept functioning like the old government system taking orders from local politicians and other power centres. None has got anything to do with the business of MIHAN but the only interest is to maintain own 'position with the benefits associated with it. This is the reason why there are so many litigations in the project only to help the lawyers to earn livelihoods. On one hand, the top politicians who hail from Nagpur are optimistic about the development of Nagpur, but the young professionals who want to return to Nagpur from metrocities like Mumbai, Bangalore and Pune are not finding enough opportunities to come back. Job creation is something every Nagpurian rather a native of Nagpur is expecting from MIHAN project. Every day we could see hundreds of youngsters visiting MIHAN in search of job only to face rejection or a fake job offer from fraudsters.

Conclusion:

In order to make MIHAN, a success story for Vidarbha, few strategies that can be adopted and implemented immediately for the project to succeed are listed below:

5. The name of the company needs to be modified from MADC in order to differentiate itself from MIDC and get an independent identity. Even MIHAN India Limited when termed MIL is confused as MIAL, the company operating Mumbai International Airport.
6. At least MIHAN Project can be certified under ISO certification to streamline the activities and Standardize the processes. This certification can also be used as a marketing tool to attract new companies to MIHAN
7. The decision maker for the project (An IAS officer or otherwise) should at least be based at Nagpur, so that companies can get the approval within least time improving ease of doing business(EODB) in MIHAN.

8. Dynamic Decision making at local level to be encouraged in order to speed up the process of allotment and approvals
9. Continuity in business has to be ensured particularly with the investors, which is lost due to the transfer of key officers
10. Retired staff from government organizations, out of which some of the staff is tainted with suspension under corruption charges should be immediately replaced with young experienced officers
11. Succession planning has to be done in order to strategize the future path of the company
12. The process of approval is tad bit slow as compared to what it was couple of years back. An initiative of MADC Mobile App was started few years back, but presently, evn the website of MADC also doesn't work. This needs to be fixed on priority as website of any company is its face in online world. If the website is not working, the company doesn't exist for the netizens.
13. A separate department having experienced officers and staff for providing exact information about the companies to the job seekers and arranging trainings for the incumbents for the positions available in various companies has to be created. The department has to work hand-in-hand with the business development team responsible for bringing more and more organizations in MIHAN project.
14. Since Nagpur is at the geometric centre of the country, after GST, there is enormous scope for the e-commerce players to set up their warehouses in MIHAN. Accordingly, warehousing sector may be promoted tweaking few rigid policies and discounting the land rate increased due to Patanjali's land allotment.
15. After the new state government resumed office, a delegation of American Companies had visited MIHAN in the year 2014, due to which **Amazon** started its warehouse in MIHAN. Similar conversion of leads is required in double digits to bring top companies in MIHAN.

These are some of the strategies that can be adopted with immediate effect without any major budget sanction, in order to revive the MIHAN project and make it a success story for Vidarbha region.

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ARBITRAGE TRADE ANALYSIS OF TEN SELECTED STOCKS TRADED IN BSE AND NSE

Dr. Vijay kumar Kaluvala

Asst. Professor

Renaissance Institute of Management Studies

Datala, Chandrapur

Abstract

Traditionally, indices have been used as benchmarks to monitor markets and judge performance. Modern indices were first proposed by two 19th century mathematicians: Etienne Laspeyres and Hermann Paasche. The grandfather of all equity indices is the Dow Jones Industrial Average which was first published in 1896; since then indices have come a long way - not only in their sophistication - but also in the variety. There are three main types of indices, namely price index, quantity index and value index. The price index is most widely used. It measures changes in the levels of prices of products in the financial, commodities or any other markets from one period to another. The indices in financial markets measure changes in prices of securities like equities, debentures, government securities, etc. The most popular index in financial market is the stock (equity) index which uses a set of stocks that are representative of the whole market, or a specified sector, to measure the change in overall behaviour of the markets or sector over a period of time.

A stock index reflects changing expectations of the market about future of the corporate sector. The index rises if the market expects the future to be better than previously expected and drops if the expectation about future becomes pessimistic. Price of a stock moves for two reasons, namely, company specific development (product launch, closure of a factory, arrest of chief executive) and development affecting the general environment (nuclear bombs, election result, budget announcement), which affects the stock market as a whole. The stock index captures the second part, that is, impact of environmental change on the stock market as a whole. This is achieved by averaging which cancels out changes in prices of individual stocks.

Keyword: Modern indices , Financial markets, Pessimistic.

Introduction

Indian securities market is getting increasingly integrated with the rest of the world. Indian companies have been permitted to raise resources from abroad through issue of ADRs, GDRs, FCCBs and ECBs. ADRs/GDRs have two-way fungibility. Indian companies are permitted to list their securities on foreign stock exchanges by sponsoring ADR/GDR issues against block shareholding. NRIs and OCBS are allowed to invest in Indian companies. FIIs have been permitted to invest in all types of securities, including government securities. The investments by FIIs enjoy full capital account convertibility. They can invest in a company under portfolio investment route upto 24% of the paid up capital of the company. This can be

increased up to the sectoral cap/statutory ceiling, as applicable, provided this has the approval of the Indian company's board of directors and also its general body. Indian Stock Exchanges have been permitted to set up trading terminals abroad. The trading platform of Indian exchanges is now accessed through the Internet from anywhere in the world. Mutual Funds have been permitted to set up off-shore funds to invest in equities of other countries. They can also invest in ADRs/GDRs of Indian companies.

Review of literature

According to Huberman et. Al. (2005) Focusing on capital asset returns governed by a factor structure, the Arbitrage Pricing Theory (APT) is a one-period model, in which preclusion of arbitrage over static portfolios of these assets leads to a linear relation between the expected return and its covariance with the factors. The APT, however, does not preclude arbitrage over dynamic portfolios. Consequently, applying the model to evaluate managed portfolios is contradictory to the no-arbitrage spirit of the model. An empirical test of the APT entails a procedure to identify features of the underlying factor structure rather than merely a collection of mean-variance efficient factor portfolios that satisfies the linear relation

Research Methodology

The study is important from the point of view of the volatility of the stock market and the scope of ARBITRAGE in the changing market scenario. The study will also compare the ten selected stocks in BSE and NSE namely RELIANCE, INFOSYS, ICICI BANK, NTPC, TATA Steel, MARUTHI SUZUKI, CIPLA, ACC CEMENTS, SUN PHARMA, BHARATHI AIRTEL and compare them for arbitrage. The criteria for the selection of the above mentioned stock is that these are some of the stocks which are highly traded in BSE and NSE, and are giving good returns to the investors. From investors point of view, the study would be helpful for better investment decision making process. From the companies point of view the study would help to understand the business cycle and design appropriate strategies.

Random Sampling

A random sample gives every unit of the population a known and non-zero chance of being selected in the population. Randomness is the very basis of selecting a representative sample. Random sampling is not the same as chance selection. Random sampling is also called as proportionate sampling as each class of items is in the same proportion in the sample as in the universe.

In this study random sampling technique is used for the Stock Brokers, Sub brokers and Investment Consultants which represent the universe of the study.

Sources of Data Collection

Data is the basic input to any decision making process in a research study; processing which gives the statistics of importance of the study. The data can be classified into primary and secondary data. The data which is collected from the field under the control and supervision of the investigator is known as primary data while the data collected from books, journals,

magazines, government publications, annual reports of companies etc. is known as secondary data.

Scope of the study

This project involves whether the arbitrage trading of shares is possible or not. For this purpose, the data will be collected for the 10 companies from 2010-2014. However, the study extended till 2016 thus the monthly data till 2016 was collected of the following companies from both BSE. The companies are RELIANCE, INFOSYS, ICICI BANK, NTPC, TATA STEEL, MARUTI SUZUKI, CIPLA, ACC CEMENTS, SUN PHARMA and BHARATI AIRTEL. The data was collected from the websites of BSE and from the books relating to Arbitrage Pricing Theory. The project involved taking the share prices of the shares listed in BSE and NSE and finding out the differences in the share values of both markets. The analysis will be made based on the differences in the share prices. The shares which give more positive returns and positive averages are accepted for arbitrage process. Apart from this Beta values of these stocks were also calculated which represents the riskiness of the companies and on that basis a ranking was given to them.

Objectives of Study

1. To identify the chance of arbitrage, thus measuring the volatility in returns.
2. To identify the best share that gives maximum returns through arbitrage.

Hypothesis

Null Hypothesis

H₀: Positive Returns on share prices increases the scope for Arbitrage than Negative returns on share prices.

Data analysis

This study attends to establish the relationship between Indian stock market prices and macroeconomic variables. BSE Sensex is used in this study as a proxy for the Indian stock market and macroeconomic variables consist of Exchange rate and GDP Growth Rate. These macro variables played a major role in Indian economy. Data of these macroeconomic variables is collected from the website of Reserve Bank of India, World Bank, website of Federal Reserve Bank, website of Bombay stock exchange and moneycontrol.com. Information regarding stock prices is collected from the website of BSE. The quarterly data is used in this study from January 2000 to May 2010.

Also the primary data that were collected after conducting the survey of total 160 present and prospective investors to know which factor is more responsible for the volatility of stock market.

Comparative Arbitrage Analysis

Sr. No.	Name of Organisation	Covariance	Beta	Risky Investment
1	Reliance Industries Ltd.	21.11	1.00	10
2	Infosys Ltd.	16.77	0.80	6
3	ICICI Bank Ltd.	41.24	1.97	1
4	NTPC Ltd.	19.65	0.94	8
5	Tata Steel Ltd.	32.75	1.56	2
6	Maruti Suzuki India Ltd.	31.61	1.51	3
7	Cipla Ltd.	11.65	0.56	4
8	ACC Ltd.	22.79	1.09	7
9	Sun Pharma Ltd.	20.94	0.98	9
10	Bharti Airtel Ltd.	17.21	0.82	5

Conclusion

- ICICI Bank with highest beta is most risky and volatile stock followed by Tata Steel Ltd. with Beta of 1.56 and Maruti Suzuki India Ltd. at 3rd position in terms of risk with beta of 1.51.
- The covariance of Reliance industries ltd. with market index is 21.11 also Beta co-efficient of Reliance Industries Ltd. Is 1.00 which indicates that the stock moves exactly in step with the market.
- Study reveals that the covariance of Infosys Ltd. With market index is 16.77 also Beta co-efficient of Infosys Ltd. is 0.80 which indicates that the stock is 20% less volatile than market. ICICI Bank Ltd. with market index is 41.24 also Beta co-efficient of Infosys Ltd. is 1.97 which indicates that the stock is 97% more volatile than market.
- NTPC Ltd.. with market index is 19.65 also Beta co-efficient of Infosys Ltd. is 0.94 which indicates that the stock is 6% less volatile than market.

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RESEARCH IN INDIA : CHALLENGES AND OPPORTUNITIES

Prof. (Dr.) Anand Mittal*: Corresponding Author, Associate Professor, Department of Economics, Hansraj College, University of Delhi, Delhi, India Mobile : +91-9810082979, email: dr.anandmittal@yahoo.com

DivishaGoyal: Assistant Professor, LaxmiBai College, University of Delhi, Delhi, India

Arjun Mittal, Assistant Professor, Shri Ram College of Commerce, University of Delhi, Delhi, India

I. ABSTRACT

In this paper, the authors have made an endeavour to study whether the Draft New Education Policy (NEP) that addresses the challenges faced by the present education system related to equity, accessibility, affordability, quality, and accountability going to bring revolutionary transformation to the education system by bringing reforms at all levels. It is expected that it would make our education system comprehensive enough that ensures jobs employment till the highest education level. The unsavoury issue is that people invest more than five years to get a Ph.D degree but to their dismay, even job is not ensured to them; which is a clear setback to the highly qualified people chasing their career in academics.

The authors are of the view that the draft NEP shall focus on targeting productive outcome driven R&D in the Government sector to ensure 100% employment to the Ph.D candidates and provide favourable infrastructure to the private players and formulate policy to ensure more R&D share to them in India which would increase the level of R & D in the country to achieve the target rate of two percent. This would contribute to a higher level of economic growth. Employment opportunities need to be created in the existing academic and research institutes by allowing more public funding from the Government in this sector, else the talented creamy layer of the country may get largely affected. National Research Foundation (part of draft NEP) shall facilitate the objective of productively employing more qualified people; leveraging resources from across the industry to support collective research projects between Indian institutions such as IITs, IISERs, NITs and universities abroad; and also energise the innovation and research culture across various academic institutes, especially at the college and the university levels. Adopting international practice of some developed countries can help policy makers in the country to achieve this objective in a more efficient and effective way. With the higher demographic dividend rate that the economy is experiencing, this is indeed a wakeup call for the country to productively ensure employment to the young population of the economy who can potentially contribute to the GDP, and replace *jobless growth with job oriented growth*.

II. KEY WORDS:

Draft New Education Policy (NEP), R&D, Employment, Ph.D, National Research Foundation

III. INTRODUCTION

Policymakers have been familiar with the dreary research state in India for long. Repeatedly, the quality and authenticity of the research outcome has been questioned. The Government has taken a string of initiatives, beginning in 2013 to boost the researcher's number in higher education. For starters, the Human Resource Development Ministry introduced the National Higher Education Mission or the Rashtriya Uchchatar Shiksha Abhiyan to deliberately fund higher education set up in the country. The National Institutional Ranking Framework was introduced in 2015 to rank institutes and universities in different parameters, including research. Subsequently, the GoI notified the 'Institutes of Eminence (IoE)' scheme, where it originally committed to assist 20 institutes to become world-class universities – out of which six have been already announced and many more are awaiting their status upgradation. In the budget (March 2018), 'Prime Ministers Research Fellowship', was introduced; with an initial allocation of budget worth INR 16.5 billion. Under the scheme, postgraduate and undergraduate students with Cumulative GPA of minimum 8 from creamy Indian institutes like the IITs, NITs, Indian Institutes of Science Education and Research, IIIT, and Indian Institute of Science will be eligible for direct admission in Ph.D programmes of IISc and IITs; and shall also be fairly reimbursed under the scheme.

(IV) LITERATURE REVIEW

Khare Mona (2014), discusses that there exist challenges to prepare the educated graduates from our extensive education streams for the rising skill requirement of employable youth. Chatterjee Esha, Sonalde Desai, Reeve Vanneman (2018) state that the connection between employment and education is governed by both the income and the substitution effect. The substitution effect implies that educated women demand higher wages which would induce them to substitute their labor force participation for leisure; while the income effect, affirms that educated females have larger incomes for the same level of work, inducing them to devote larger time to leisure activities. Additionally, and more importantly, educated females have tendency to marry educated men having higher incomes, so the higher family incomes further discourages females' labor market participation. Sengupta Antara (2019), quotes that India's education system has maintained status-quo for over many decades now, and no revolutionary endeavour has been made to upgrade the quality of content or its delivery. Mittal Anand et. al (2019), inferred that India should focus on targeting productive outcome driven R&D in the Government sector, ensuring more favourable infrastructure and policy to increase the share of private sector R&D in India and achieve the target rate of two percent which would further contribute to an elevated level of economic growth. Mittal Anand et. al (2019), recommend that the Government should infuse more in the human capital for raising the employability in the country; emphasise more on disseminating quality education among the people.

(V) OBJECTIVES

- (i) To analyse scope of Ph.D research degree in India.
- (ii) To discuss about the scope, establishments, and objectives of National Research Foundation in India.
- (iii) International comparison in regard of Ph.D funding and their research study with respect to scope and opportunities for Ph.D candidates.
- (iv) Recommend suggestions and discuss various lessons to learn.

(VI) DATA AND METHODOLOGY

The analysis in the study is build on secondary information collected through online sources. Newspapers, books, relevant websites and journals have been referred. Understanding and analysing the employability situation of Ph.D candidates in the country, suitable recommendations to enhance employability have been suggested for the country.

(VII) ANALYSIS:

“Undertaking a Ph.D does not only give a strong understanding of particular discipline; it instills the capability to analyse complex issues critically and find newer ways of sorting a challenge and then devising and implementing the solutions’. These are necessary skills in any work environment.

Indian Research Scenario

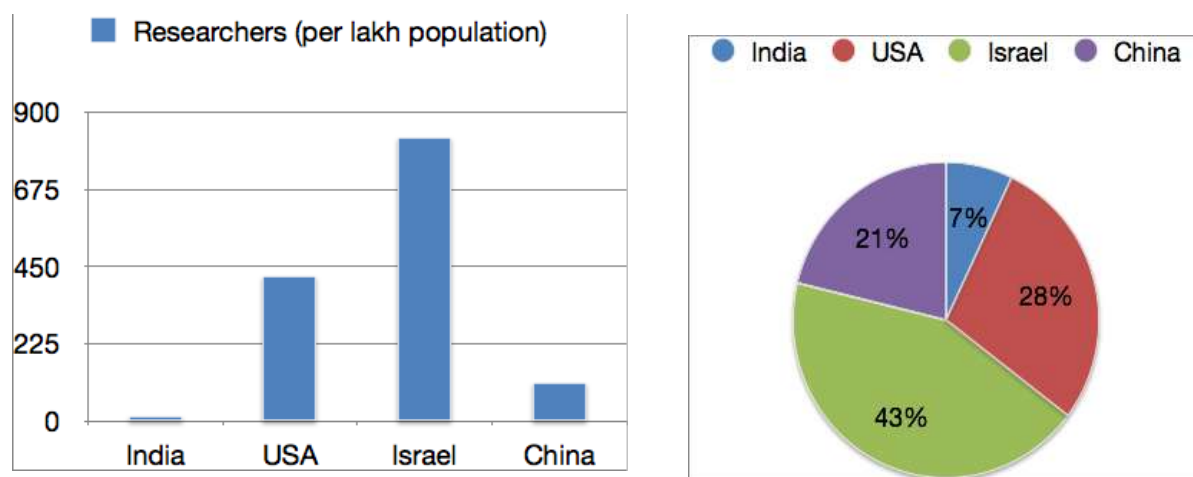
Indian affiliated colleges and universities have failed badly in this aspect. Much of the research work done in India is either redundant or irrelevant for any practical objective. Moreover, research work is mostly done in distinguished research institutes rather than the university campuses. However, around 80% of the students who are enrolled in the higher level education are absorbed in these universities which run undergraduate programmes. Apart from basic research, there is a scarce interdisciplinary research and education in these campuses because of minimal interaction across divisions. The Draft Policy reasserted the public spending commitment of 6% of the GDP in education. However, during 2017-18 in India, publicspendingineducationwasonly2.7%ofGDP.ThefirstNEP1968had suggested that public spending in education shall be 6% of GDP, that was recapitulated in 1986 by the second NEP.

Table 1: Investment on Innovation and Research (2014)

Country	Researchers (per lakh population)	Spending on R &D (% GDP)
India	15	0.7
USA	423	2.8
Israel	825	4.3
China	111	2.1

Source: PRS, Economic Survey of India 2017-18

Figure: Investment on Innovation and Research (2014)



The NEP had exhibited concern that India spends only about 0.7 per cent of its GDP in research and innovation (2014) while countries like the Israel (4.3%), China (2.1%) and US (2.8%) invest at minimum three times more as a proportion of GDP in research (table 1). The exceedingly small proportion of GDP that India currently invests in Research & Innovation is naturally reflected in its research-output numbers. In terms of publications, India has been

doing somewhat better, showing a steady growth in its output and taking India's share of scientific publications from 3.1% in 2009 to 4.4% in 2013.

(a) *Ph.D Funding in India:* There exist a range of choice for funding Ph.D students in India, including grants and scholarships given by the Indian government, other countries' governments especially for Indian students; scholarships by the universities themselves, and by public and private organizations. For example- the National Centre for Biological Sciences which gives grants to independent researchers, including Ph.D students.

(b) *Establishment of National Research Foundation:* The government has proposal to establish National Research Foundation with the objective to energise and catalyse innovation and research across all academic institutes, especially at the college and university levels. NRF will assemble the research grants provided by the varied ministries. Besides providing funds, the draft NEP mentioned that NRF will develop research capacity in colleges and universities. The draft NEP stated- "Foundation will enclose the four major areas of Sciences, Arts & Humanities, Technology, and Social Sciences. Apart from strengthening the current fragile system that support subjects such as Humanities and the Social Sciences, NRF shall also bring in linkage among the varied research attempts of multidisciplinary character". The idea for setting up the NRF was first raised in the draft NEP 2019, which discussed grant of Rs. 20,000 crore annually, approximately 0.1% of GDP, must be set aside for it. The initial grant given to NRF shall be raised progressively in the next decade since India's capacity towards more quality research increases as per NEP suggestions and other divisions such as environment and agriculture may also be incorporated. National Research Foundation shall be established to allow competitive funding for fine research proposals, as determined by the success of proposals and peer reviews. Any unspent funds in the initial years will be held towards a corpus for the NRF which will be managed professionally for a steady risk-free return.

The NRF shall also function as a liaison across ministries of government, researchers, and industry, to safeguard that the most societally and relevant useful research reaches the public. Finally, the NRF will recognise outstanding research accomplishments achieved through NRF funding and initiatives, across subjects and various categories, through prizes and seminars recognising the researchers work. All these initiatives, together with career management structures suitably incentivising research at HEIs, will help bring research cultures to institutions, including most state universities, where research has not previously existed in meaningful terms.

The primary activities of the NRF shall be to: (i) Fund competitive, peer-reviewed grants of all kinds and across all disciplines; (ii) Seed, facilitate and grow research across academic institutions, especially across college and university.

(C) Facilitating Transformation of the Education System

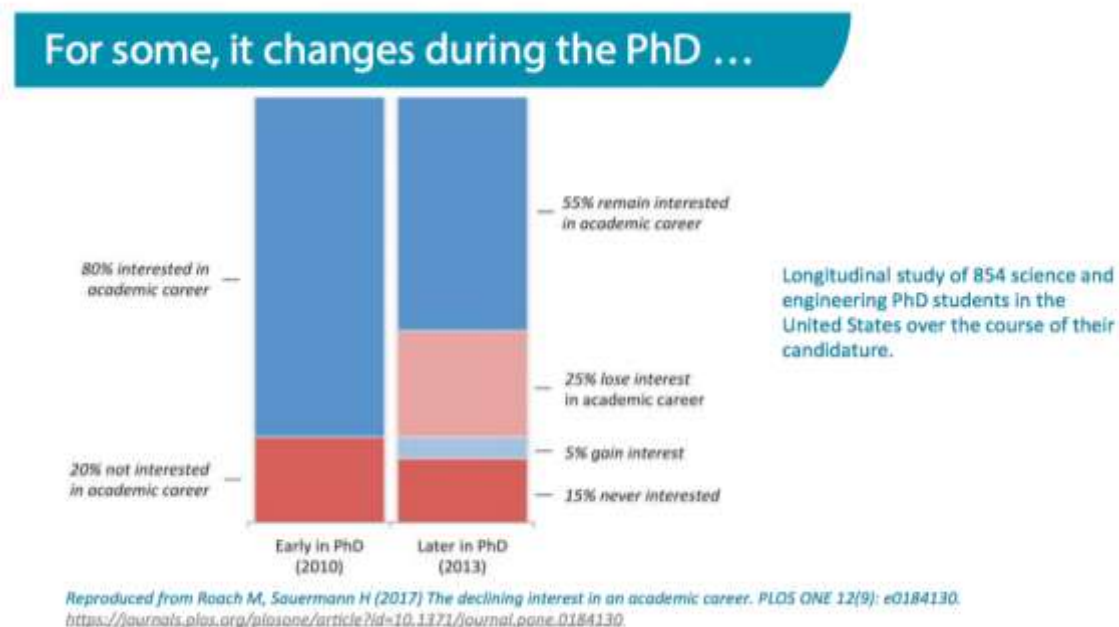
Corruption has distorted country's education governance. Inefficient systems need to be rebuilt and made to work with new resolve and effective leadership. The approach should be to ensure that both political initiatives and administrative systems serve the goal of transforming the education structure, and investing public resources in areas that build the capitalforaffecting change. Facilitating national development, India desires to take its position behind China and United States as the 3rd largest economy by 2030-2032. India is currently sixth largest economy and we shall reach 5 trillion in next 5-6 years moving to 4th or 5th place.

By around 2030-2032 we shall be the 3rd largest country at over ten trillion; which would not be powered by natural resources, rather by knowledge resources.

(2)International Scenario across Countries

(a)A study done in USA

Figure 2: Longitudinal study of 854 sciences and engineering Ph.D students in the US over the course of their candidature.



The above study indicates that the proportion of Ph.D candidates opting for academic career has reduced sharply and almost 25% of them lost interest in academic career from 2010 to 2013.

Ph.D funding in US

In US, the Ph.D candidates are discouraged from applying in employment externally. Universities offer an annual stipend and a tuition waiver instead. The source of amount and funding varies between universities and between subjects. Ivy League and many other institutions are usually able to provide more Ph.D funding than the smaller private institutions. Many Ph.D candidates in US work as research assistants or teaching assistants to augment their income. These are both provided as contracts between the institution and the students yearly, and renewed if student keeps designated academic standards. Few graduate schools ask students to acquire fellowships or take benefit of their respective supervisor's research grants from the government agencies like National Institutes of Health and National Science Foundation.

A similar picture comes out of Europe

The EURAXIND* project found that:

- 78% of researchers initially wanted an academic career in the long term.

BUT

- of those who went into non-academic roles, 84% are very or fairly satisfied and only 6% now want an academic career.

Garrett G, Cox A, Day E (2018) *Enhancing researcher employability: What employers want and what researchers deliver*. Vitae Researcher Development International Conference, Birmingham.

<https://www.vitae.ac.uk/researcher-careers/euraxess-uk-career-development-centre/euraxind/euraxind-project-background>

* EURAXIND project involved a series of surveys with 994 responses from researchers and 144 from employers.

(B). A study done in Europe

The study in Europe indicate that people who choose a non-academic career, very few proportion of them wish to switch to academics career.

Ph.D funding in UK

There is a range of options for funding Ph.D students in the UK. Most universities have a restricted number of bursaries or studentships made specifically accessible for postgraduate candidates. The amounts given could vary from covering living costs, tuition costs or

just covering costs for research materials and textbooks. Government-funded Research Councils gives tax-free bursaries including tuition fees and around £15,000 (US\$19,600) stipend per year for 3 years. Scientific studentships are provided by charities and organizations such as Institute of Cancer Research (ICR), Cancer Research UK and Wellcome Trust which start at approximate US\$31,725 and rise every year (National Insurance and tax free). Ph.D students in UK can also work as a tutor students, research assistant or deliver paid lectures.

(C) National Research Foundation in South Africa

The National Research Foundation was set up through the NRF Act (1998). As a statutory independent agency, the foundation supports and promotes research in South Africa mainly through the country's Higher Education Institutions, Science Councils and National Research Facilities with a view to enhance high-level research capacity and generate knowledge within the National System of Innovation. Open accessibility to this knowledge base ensures: (i) Dissemination of knowledge; (ii) Utilisation/uptake/application of this knowledge; (iii) Globalisation of science and accelerated transformation; and (iv) Faster transformation of this knowledge into developmental and innovative applications for the society's benefit.

(VIII) LESSONS TO LEARN AND SUGGESTIONS

The issue is that people invest more than five years to get a Ph.D degree but to their dismay, Government doesn't even ensure them a job; which is a clear setback to the highly qualified people who want to chase their career in academics. The Draft NEP that addresses the challenge faced by the present education system related to equity, accessibility, affordability, quality, and accountability is likely to bring revolutionary transformation to an extent. National Research Foundation (part of draft NEP) shall facilitate the objective of productively employing more qualified people; leveraging resources from across the industry to support collective research projects between Indian institutions such as IITs, NITs, IISERs and universities abroad; and also energise the innovation and research culture across various academic institutes, especially at the college and the university levels. The authors are of the view that the draft NEP shall focus on targeting productive outcome driven R&D in the Government Sector to ensure 100% employment to the Ph.D candidates and provide favourable infrastructure, and R&D share to the private players and formulate policies which would increase the level of R &D in the country to achieve the target rate of two percent. This would contribute to a higher level of economic growth rate. Employment opportunities need to be created in the existing academic and research institutes by allowing more public funding from the Government in this sector, else the talented creamy layer of the country may get largely affected. Adopting international

practice of some developed countries can help policy makers in the country in achieving this objective in a more efficient and effective way. With the higher demographic dividend rate that the economy is experiencing, this is indeed a wake up call for the country to productively ensure employment to the young population of the economy who can potentially contribute to the GDP and replace *jobless growth with job oriented growth*.

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“EDUCATIONAL PLANNING AND ECONOMIC GROWTH FOR DEVELOPING COUNTRIES IN 19TH CENTURY”

Dr. Meenakshi kaushik, Assistant Professor, DIRD, GGSIPU, New Delhi

Ms. Chitra Jha, Assistant Professor, DIRD, GGSIPU, New Delhi

Abstract:

Education Planning in India is one of the essential areas of concern in all the Five year Plans in India. With the onset of globalization and modernization in recent times, education at all levels is very necessary if India is to outdo other nations.

If more education leads to faster economic growth, then investments in education could pay for themselves in the long run, and could also play a role in reducing poverty. Such reasoning could be crucial in bolstering political support for education investments and ensuring their sustainability. This paper considers the evidence for an education-growth link, and explores some of the issues that governments and donors face in making investments which will best take advantage of the potential for education to contribute to economic development for developing countries.

Key words: *Human and Physical Capital, Demands for Education, Cost of Education, Expenditure on Education in India, Social and Private Costs of Education, Educational Financing.*

INTRODUCTION:

There are two very basic reasons for expecting to find some link between education and economic growth. First of all at the most general level it is intuitively plausible that living standards have risen so much over the last millennium and in particular since 1800 because of education. Progress of the sort enjoyed in Europe was not observed in the illiterate societies that have gradually merged into the world economy over the last two hundred years. To the most casual observer it must seem that there is a link between scientific advance and the way in which education has facilitated the development of knowledge. Of course the Curies and the Newtons of this world are few and far between. But people with only very limited education often find it difficult to function at all in advanced societies. Education is needed for people to benefit from scientific advance as well as to contribute to it.

Secondly, at a more specific level, a wide range of econometric studies indicates that the incomes individuals can command depend on their level of education. If people with education earn more than those without, shouldn't the same be true of countries? If not the rate of change of output per hour worked, at least the level of output per hour worked in a country ought to depend on the educational attainment of the population. If spending on education delivers returns of some sort, in much the same way as spending on fixed capital,

then it is sensible to talk of investing in human capital, as the counterpart to investing in fixed capital. The process of education can be analysed as an investment decision.

HUMAN AND PHYSICAL CAPITAL:

We begin by a consideration of the links by which investment may affect the growth of output. Both physical and human capital directly impact on the productive capacity of an economy. However such direct effects may not be the most important. More human capital may itself affect the rate of growth of physical capital. If human and physical capital is complements then increasing human capital raises the rate of return on physical capital.

Human capital refers to the stock of skills and knowledge embodied in the ability to perform labor so as to produce economic value. It is the skills and knowledge gained by a worker through education and experience. Many early economic theories refer to it simply as workforce, one of three factors of production, and consider it to be a fungible resource -- homogeneous and easily interchangeable. Other conceptions of labor dispense with these assumptions. Therefore, human capital (as defined by Smith) and the productive power of labor are both dependent on the division of labor – *The greatest improvement in the productive powers of labour, and the greater part of the skill, dexterity, and judgment with which it is any where directed, or applied, seem to have been the effects of the division of labour.* There is a complex relationship between the division of labor and human capital.

In general physical capital refers to any non-human asset made by humans and then used in production. Often, it refers to economic capital in some ambiguous combination of infrastructural capital and natural capital. As these are combined in process-specific and firm-specific ways that neoclassical macroeconomics does not differentiate at its level of analysis, it is common to refer only to physical vs. human capital and seek so-called "balanced growth" that develops both in tandem.

Such analyses, however, fails to make distinctions considered critical by many modern economists. Natural capital grows, while infrastructural capital must be built. Even "balanced" economic growth includes many processes thought to be, or lead to, uneconomic growth. Human capital requires rest and must make choices whether to seek rest or income, which physical capital does not make: this is the rest problem.

The underlying rate of technical progress in an economy, by which is meant the increase in output due to factors other than measured inputs, may depend on how much educated labour there is in the economy. Rates of return on investment must consider both the direct and indirect effects of such investment. In assessing the effects of human capital on output we have both macro and micro evidence. To place the problem in context it is useful to set out how the stock of both human and physical capital in Africa compares with non-African countries. The growth rate for the average of primary and secondary school completion in Africa is half that for South Asia, as is the growth rate of income. The growth rate for human

capital is a weighted average of the growth rates for primary and secondary school completion rates with the weights taken from 1980. While the averaged growth of education in Africa is lower than both East Asia and South-East Asia the gap is small relative to the differences in the growth rate of physical capital. It is at the secondary level where Africa's growth rate is far below that of any other developing region. At this level the gap between Africa and other developing regions has widened substantially. There is evidence that it is education at the secondary level which is important for increasing productivity in manufacturing. This poor performance may have serious implications for Africa's ability to compete in a global market place.

DEMANDS FOR EDUCATION – SOCIAL VS PRIVATE DEMAND:

The notion of “demand” in schooling is now in common currency in the educational policy world. Many identify a critical shift of debate and reform from traditional models of the past to dynamic ones of the future to be defined by the change from “supply-dominated systems” towards more demand-sensitive arrangements. This characterization of shifts from the schooling of yesterday to that of tomorrow makes this a subject ripe for exploration as part of the OECD/CERI “Schooling for Tomorrow” programme. But what does “demand-driven” mean in practice? Is it more than a facile slogan? As this section shows, a family of terms and developments related to demand – choice, personalization and individualization – are some of the most important, as well as controversial, aspects of education today. It may be perceived as the private demand for education. There is need to clarify these different concepts and their relationships. This publication complements another recently published in the “Schooling for Tomorrow” series on “personalizing education” (2006a), as part of OECD/CERI's contribution to clarifying issues in the way ahead for schooling.

Demand is a multi-dimensional concept which warrants further exploration. Once these dimensions start to come into focus, they should be subject to empirical analysis in order to move beyond abstraction and ideology. Demand has quickly become an established part of the discourse on educational reform across the world. It is a controversial concept. For some it is associated with the precepts of New Public Management – an increased role for clients and markets, even privatization – which are at odds with the social and humanistic traditions of education to promote equity, cultivate humanity, and sustain local communities. It may be perceived as the social parlance of demand for education. All these senses have a reflection in the broad concept of “demand”, whether to seek to improve public services via the pressures of quasi-markets or to enhance participation and active forms of personalized teaching and learning. That enhancing the role of demand takes a prominent position in the reform debates in many OECD countries, while being such a broad elastic concepts, calls a systematic clarification of both the concept and associated empirical evidence.

The point of departure has been clarification in terms of the ways in which demand can be expressed (exit and voice) and the potential impacts a more demand-led system may have for key issues like quality and equity. Thus demand is understood as a multi-dimensional concept that needs to be unpacked. The dimensions of exit and voice at both the collective and individual levels have been outlined in this chapter. These different levels and expressions of demand interact in complex ways. For example, the demands for special types of education from specific societal groups (collective voice) lead to diversity that allows individuals to choose. Better understanding the mechanisms for expressing demand and their interactions is not only useful in itself but it also permits a focus on the outcomes resulting from applying these mechanisms at the levels of schools and the school system. Again the relations are complex. Greater voice may be a force pushing schools to deliver relevant and high-quality teaching; it could be a way for privileged parents – with greater influence and a more developed idea of their demands – to dominate school decision-making in favour of their own children.

Clearly not all countries and within countries, not all social groups, are benefiting from the massification of higher education. UNESCO's regional Higher Education conferences have asked how higher education can become more accessible to cultural and linguistic minorities, indigenous groups, the disabled or people living in remote areas. Migration trends, combined with increasing student mobility – expected to triple by 2025 – will further accentuate the diversity of student populations, calling for policies that promote access to learning and academic programmes and staff that respect cultural and linguistic diversity. Several countries have established quota systems, scholarships and special secondary schools to help students from disadvantaged groups prepare for admission to universities. Addressing demand with a concern for equity and inclusion is a considerable challenge.

Table 1: Dimensions and expressions of demand

	CHOICE	VOICE
INDIVIDUAL	Individuals choosing and changing a school or programme or leaving altogether like in home schooling.	Parents or students directly participating in schools' decision-making and having an important part in the learning process (personalisation).
COLLECTIVE	Groups starting schools—whether private or publicly-funded private—based on religious, ethnic, linguistic, or pedagogic goals.	Interest group influence on schooling issues, such as through curriculum consultation, lobbying, or pressure group politics.

COST OF EDUCATION:

India has developed one of the largest systems of Higher Education in the world with over 230 universities and 6500 vocational colleges catering to about 10 million students. Most of these are publicly funded although some may be privately run. The financing of higher education, however, is often reprioritized due to competing demands for budgetary funds from primary and secondary education sectors. As a proportion of GNP, Higher Education was only about 0.19 per cent in 1950-51. By 1980-81 it went up five fold to 1 per cent but by mid-1990s it dropped to 0.4 per cent. In the government plan outlay the share of higher education doubled for 9 per cent in the first five year plan to 18 per cent in the second. It increased to 25 per cent in the fourth but has now come down to 15 per cent in the seventh five year plan. In the eight five year plan it was around 8 per cent. It may be stated that the non-plan expenditure in education is huge compared to plan expenditure.

Classification of Costs of Education

Costs can be classified into two types:

- (a) Individual or private costs
- (b) Institutional or public or social costs

(a) Individual Costs or Private Cost

Individual costs or private costs of education are those costs of education incurred by a learner or by his/her parents/guardians or by the family as a whole. Individual costs are of two types: direct and indirect.

Direct costs: These are those costs that are directly visible. They include all money expenditure incurred on different items by the student. For example, expenditure on tuition fees, other fees and charges, purchase of books, stationary, uniforms, hostel expenses and transport.

Indirect costs (opportunity costs): Indirect costs are those costs which are not directly visible. These costs are sometimes called 'opportunity costs or foregone earnings'. Opportunity costs refer to the value of students' time or earning forgone to continue the study.

Institutional Costs of Education or Public Costs of Education

Costs incurred at the institutional level (government, private or mixed) are called institutional costs or public costs of education. Public costs are those that include financing by the government on the basis of taxes, loans and other public revenues. The institutional costs of education are, generally, analysed using the following variables.

- Variable and fixed costs of education.
- Recurring and non-recurring costs of education.
- Current and capital costs of education.

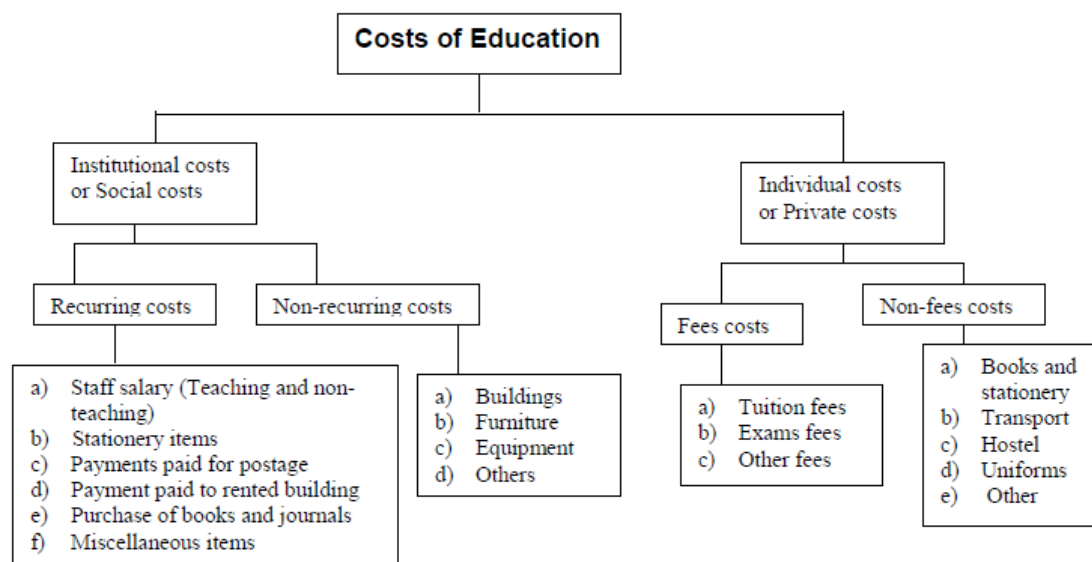


Figure 1 Classification of costs

EXPENDITURE ON EDUCATION IN INDIA:

1. The importance of education in economic development is accepted across the ideological divide in economic theory and policymaking. However, what remains common to the recent phase of market-oriented reforms in India and the earlier phase of state-led development planning is the failure to ensure access to basic education for the masses. The limited spread of literacy and elementary education till date along with a miniscule proportion of the population having access to higher education provides a pathetic spectacle, especially in the backdrop of tall claims regarding high rates of economic growth and technological advances achieved during the phase of economic liberalization. The post-liberalization period has actually witnessed a gradual withdrawal of the state from the sphere of education, adversely affecting both the spread as well as the quality of education in the country.

2. Following the defeat of the BJP-led government in the recently concluded Lok Sabha elections, a great deal of enthusiasm to reverse the process of communalization of education seems to have been generated within the policy circles. It needs to be understood, however, that the drive towards such 'detoxification' would remain half-hearted at best, if larger questions regarding the role of the state in education remain unattended. For instance, even if the communally tampered textbooks of the NCERT are replaced by secular ones, the number of schools which would adhere to such curriculum is too scarce to be able to outcompete, let alone totally replace, the enormous apparatus of school education put in place by the RSS and its affiliates.

3. Table 2 below shows the combined expenditure of the Central and State governments on education as a percentage of GDP in the recent years. It can be easily observed that the total state expenditure on education in the country has hovered around 3% of GDP, far below the 6% of GDP benchmark set by the Kothari Commission way back in 1968.

Table 2	
Year	Central and State Governments' Combined Expenditure on Education as a percentage of GDP
1999-00	3.3
2000-01	3.1
2001-02*	3.1
2002-03**	3.1
Source: Economic Survey, 2002-03.	
Notes: * Revised Estimate, ** Budget Estimate.	

The inadequacy of resources has stemmed primarily from the unwillingness of the Central government to undertake adequate expenditure on education. Table 3 amply demonstrates the negligible proportion of resources spent for education through Central Budgets in recent years, with the percentage of expenditure on education never exceeding 2.5% of total budgetary expenditure.

Table 3	
Year	Expenditure on Education as percentage of Total Central Budgetary Expenditure
1999-00*	2.41
2000-01*	2.49
2001-02*	2.21
2002-03**	2.39
Source: Calculated from Expenditure Budget and Demand for Grants, various years.	
Notes: * Revised Estimate; ** Budget Estimate	

The larger burden of expenditure on education is already being borne by the State governments, which are almost without exception caught up in a fiscal mess, thanks to the squeeze on transfer payments to the States and higher interest rates charged on their

borrowings. It follows therefore that the promise of spending 6% of GDP on education contained in the Common Minimum Programme can only be achieved through a stepping up of Central government expenditure on education.

4. Despite the fact that the proportion of Central Budget expenditure on education did not experience any increase during its tenure, the NDA government proclaimed to have 'prioritized' elementary education by allocating a greater proportion of resources towards it. This so-called 'prioritization' can be seen from Table 4 where there is increase in the proportion of total budgetary allocation on education spent on elementary education (from 39% in 1999-00 to 43.96% in 2002-03) with a concomitant fall in the proportion of expenditure on university and higher education (from 29.58% in 1999-00 to 17.34% in 2002-03).

Table 4		
Year	Expenditure on Elementary Education as percentage of Total Budgetary Expenditure on Education	Expenditure on University and Higher Education as percentage of Total Budgetary Expenditure on Education
1999-00*	39.00	29.58
2000-01*	37.74	31.02
2001-02*	44.32	20.45
2002-03**	43.96	17.34
Source: Calculated from Expenditure Budget and Demand for Grants, various years.		
Notes: * Revised Estimate; ** Budget Estimate		

However, this counterpoising of elementary and higher education, in the name of 'prioritizing' the former, is nothing but an apology for not undertaking adequate expenditure in either of the two levels. This becomes evident from Table 5 that shows only a marginal increase in the expenditure on elementary education as a proportion of total budgetary expenditure in the recent years (0.94% in 1999-00 to 1.05% in 2002-03), which calls the bluff as far as 'prioritization' of elementary education is concerned, while there is a significant fall in the expenditure on university and higher education as a proportion of total budgetary expenditure (0.71% in 1999-00 to 0.41% in 2002-03).

Table 5		
Year	Expenditure on Elementary Education as percentage of Total Budgetary Expenditure	Expenditure on University and Higher Education as percentage of Total Budgetary Expenditure
1999-00*	0.94	0.71
2000-01*	0.94	0.77
2001-02*	0.98	0.45
2002-03**	1.05	0.41
Source: Calculated from Expenditure Budget and Demand for Grants, various years.		
Notes: * Revised Estimate; ** Budget Estimate		

Such diversionary tactics need to be strictly avoided. The Union government should accept the fact that Central Budgetary allocation on education is abysmally low for all levels and expenditure needs to be stepped up for elementary as well as higher education.

5. Free and compulsory education was made a Fundamental Right for all children in the age-group of 6-14 years through the 86th Amendment of the Constitution enacted in December 2002. The law suffers from the lacuna that the children below six years of age have been excluded from its purview. Moreover, the constitutional obligation towards free and compulsory education has been shifted from the State to the parents/guardians by making it their Fundamental Duty under Article 51A (k) to 'provide opportunities for education' to their children in the 6-14 age group. While setting these anomalies right remains to be an important objective, what should be of immediate concern is the financial commitment that this legislation entails. The Tapas Majumdar Committee appointed by the government had suggested a required expenditure of around Rs. 1.37 lakh crores over a ten year time frame (1998-2007) to bring all the children in the 6-14 age groups under the purview of school education by 2008.

6. The budget estimates for total expenditure on education in the interim budget placed by the NDA government this year was Rs. 11,062 crores, which amounted to around 2.41% of total budgetary expenditure. Out of this, the budget estimates for elementary education stood at Rs. 6004 crores. The Tapas Majumdar Committee on the other hand had suggested an expenditure of Rs. 17,000 crores in 2004-05 for meeting the requirements of universal school education alone. The gap between the requirement and what the government is willing to spend is so large as to make a mockery of the goal of universal school education.

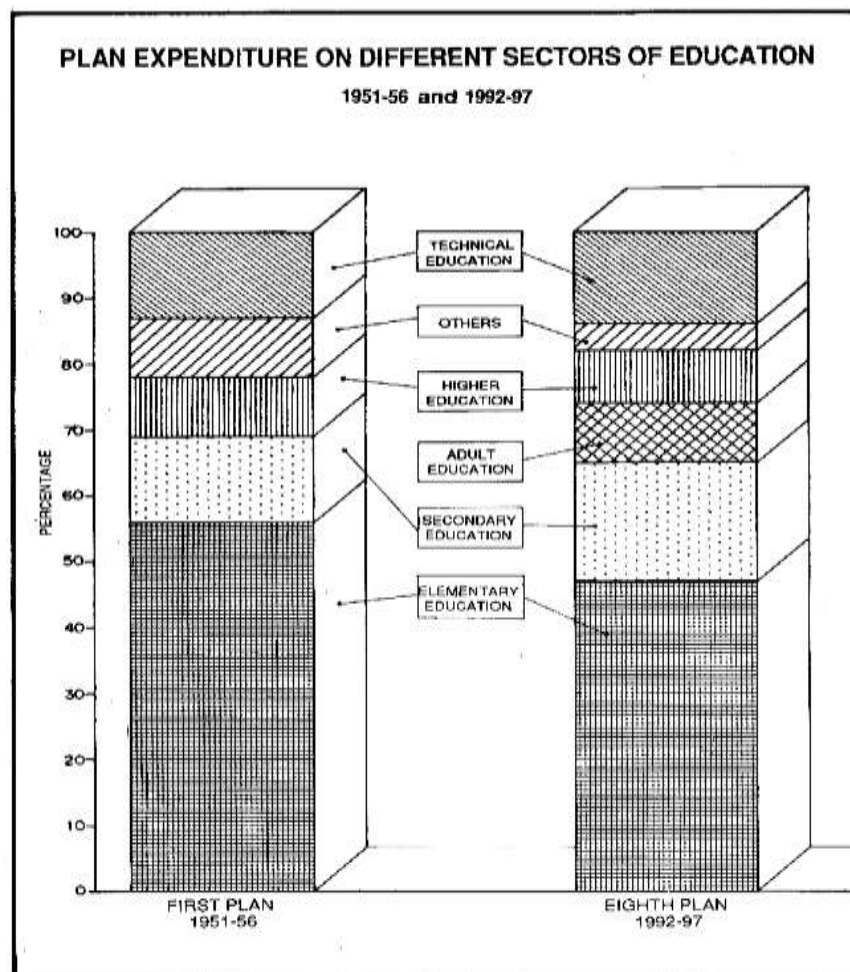


Figure 2

SOCIAL AND PRIVATE COSTS OF EDUCATION:

The benefits and costs of educational investments are different for individuals and for society. In the private decision of whether or not to pursue a particular education program, (that is, the decision made by the individual or the individual's family), only the costs that the individual (or his or her family) bears and the benefits the individual (or family) receives are taken into account. For the social decision (that is, the calculation of whether a particular educational investment makes sense for society), all costs and all benefits that accrue to anyone in the society are taken into account. From society's perspective, the opportunity cost is the *before-tax* foregone income, whereas from the individual's perspective (or that of the individual's family), it is the *after-tax* income foregone. Table 6 summarizes the direct and indirect, as well as the private and social costs of education. Notice that if education is provided by private schools that depend on student fees to cover all of their costs, then the direct private costs of education are equal to the direct social costs.

Table 6

	Private Costs	Social Costs
Direct Costs	<p><u>Out-of-pocket expenses borne by the student or the student's family, including:</u></p> <ul style="list-style-type: none"> • fees actually paid by the family; • transportation costs incurred by the family; • family's purchase of books, school uniforms, etc. 	<p><u>All the resources directly used in the production of education,³ including:</u></p> <ul style="list-style-type: none"> • time of teachers and other school employees (measured by salaries and benefits); • cost of recurrent inputs, e.g., books, materials, heating and electricity, etc; • other recurrent costs (sometimes borne by families), such as transportation, uniforms, meals, etc; • cost of capital goods, e.g., buildings and equipment (measured by their rental value).
Indirect Costs (opportunity costs)	<p><u>After-tax income foregone by the family, i.e., the value to the family of the best alternative use of the student's time, including:</u></p> <ul style="list-style-type: none"> • earnings foregone, • value of production foregone in family business/farm. 	<p><u>Before-tax income foregone.</u> (These are the same as private indirect costs except for taxes that would have been levied on the student's higher income; in other words, social indirect costs are higher than the private indirect costs by the amount of taxes foregone. See footnote 2.)</p>

If the government in a particular country covers all (or most) of the direct costs of university education (in the form of a grant, and not as a loan), then these subsidized costs will not be included in the family's calculation of whether or not to enroll a child in university.

BENEFITS OF EDUCATION:

Both individuals and countries benefit from education. For individuals, the potential benefits lay in general quality of life and in the economic returns of sustained, satisfying employment. For countries, the potential benefits lie in economic growth and the development of shared values that underpin social cohesion.

Much of the benefit of higher education accrues to individual students and their families. For members of all demographic groups, average earnings increase measurably with higher levels of education. Over their working lives, typical college graduates earn about 73 percent more than typical high school graduates, and those with advanced degrees earn two to three times as much as high school graduates. More educated people are less likely to be unemployed and less likely to live in poverty. These economic returns make financing a college education a good investment. Although incurring debt should always be approached with caution, even students who find it necessary to borrow a sizable share of the funds required to pay for college are likely to be financially better off relatively soon after graduation than they would be if they began their full-time work lives immediately after high school.

Benefits to individuals include:

- There is a correlation between higher levels of education and higher earnings for all racial/ethnic groups and for both men and women.

- The income gap between high school graduates and college graduates has increased significantly over time. The earnings benefit to the average college graduate is high enough for graduates to recoup both the cost of full tuition and fees and earnings forgone during the college years in a relatively short period of time.
- Any college experience produces a measurable benefit when compared with no postsecondary education, but the benefits of completing a bachelor's degree or higher is significantly greater. As is the case for the individuals who participate, the benefits of higher education for society as a whole are both monetary and nonmonetary

.Societal benefits include:

- Higher levels of education correspond to lower levels of unemployment and poverty, so in addition to contributing more to tax revenues than others do, adults with higher levels of education are less likely to depend on social safety-net programs, generating decreased demand on public budgets.
- College graduates have lower smoking rates, more positive perceptions of personal health, and lower incarceration rates than individuals who have not graduated from college.
- Higher levels of education are correlated with higher levels of civic participation, including volunteer work, voting, and blood donation. Given the extent of higher education's benefits to society, gaps in access to college are matters of great significance to the country as a whole. This report shows that despite the progress we have made in improving educational opportunities, participation in higher education differs significantly by family income, parent education level, and other demographic characteristics.

Observed patterns of postsecondary participation include:

- Among students with top test scores, virtually all students in the top half of the family income distribution enroll in postsecondary education, but only about 80 percent of those in the lowest fifth of the income distribution continue their education after high school.
- Income differences tend to have a smaller impact on college enrollment rates of high school graduates with high test scores than on those with lower test scores.
- Participation in higher education also varies among racial/ethnic groups. Whites and Asians of traditional college age are more likely than their black and Hispanic peers to enroll in higher education institutions. Furthermore, while the gap between blacks and whites has declined, the gap between white and Hispanic high school graduates has grown in the last decade.

EDUCATIONAL PLANNING AND ECONOMIC GROWTH:

Since the 1990s, the Indian government has been emphasizing the need to develop education in India across all levels - elementary, secondary, vocational, higher level, and technical. Towards this, the government has also formulated certain measures to increase adult literacy and continuing education among Indians.

Hindrances for Education Planning in India:

The major problems of the Education Planning in India as far as analysts opine are as under:

- high drop-out rates
- low levels of learning achievement
- low participation of girl students
- inadequate school infrastructure
- teacher absenteeism rate high
- large-scale teacher vacancies
- inadequate teaching/learning material
- lack of public involvement in provisioning of educational services
- variation in the literacy rates for the Special Groups of citizens
- variation in inter-state literacy rates

Steps taken by government in accelerating Education Planning in India:

The central as well as the state governments have been emphasizing on the growth of education at all levels. Moreover there are District Literacy Societies or Zilla Saksharta Samiti who also plays the most pivotal role in the pursuance of adult education. The first step taken by the Indian government is to initiate measures for universal elementary education among all. The other significant steps taken on the Education Planning in India are -

- to increase the number of institutions, teachers and students at elementary level
- to provide for incentives like textbooks, free uniforms and scholarships
- to offer Centrally Sponsored Program of Nutritional Support to Primary Education or Mid Day Meal Scheme
- to launch the Sarva Siksha Abhiyan Scheme
- to initiate the District Elementary Education Plan
- to launch the National Literacy Mission for providing functional literacy to the non-literates between the age group of 15 and 35
- to provide free and compulsory education for children
- to improve the Industrial Training Institutes, Boards of Technical Education and Engineering Colleges, and Polytechnology and Apprenticeship Schools
- to upgrade the Indian Institutes of Technology and Indian Institutes of Management
- to progress in new technology based areas like biotechnology, bioinformatics, and nanotechnology

. EDUCATIONAL FINANCING:

Plan allocation to education denotes current priorities and the government's commitment to new initiatives. The Indian evidence shows that allocation to education, in general, declined under successive five year plans. Nearly 7.8% of the total plan funds were allocated to education in the first five year plan. It came down to around 2.7% during the sixth five year plan though it increased to 4.5% in the eighth five year plan. This recent increase is certainly a positive trend.

The first plan accorded a high priority to elementary education and nearly 56% of the allocations were earmarked for this sector. Consequently the share of resources for higher education was only 9%. However, its share in the second plan doubled to 18% reaching a high of 25% in the fourth plan. From the 1970s onwards one finds a consistent decline in the share of allocations to higher education reaching the lowest share of 7% in the eighth plan. The trends clearly indicate that allocation to higher education increased consistently from the first to fourth plans and declined consistently thereafter. However, the argument is not that too many resources were allocated to elementary education; universalization of elementary education requires more resources than what is currently allocated. With the expansion of school education, the pressure on higher education to expand will continue. Since both sectors require more resources, a reprioritization in allocation between primary and higher education keeping the same level of public funding will leave both sectors starved.

Did the government succeed in transferring its financial burden to others? An analysis of the sources of funding for education clearly indicates that in the 1950s only 58% of public expenditure on education came from government sources. Over a period of time the share of government in educational expenditure has increased. Currently, nearly 85% of the educational expenditure comes from government sources – central, state and local. In other words, during the past three decades the total educational expenditure has increased and more importantly the share of the government to total expenditure has increased.

Therefore, mobilizing resources from non-government sources became important even to sustain the system of higher education at its present level of operation. Most of the committees appointed during this period have made various suggestions in this regard.

Policy Issues (1): On Mobilizing Domestic Resources

- Family investments in education are estimated to be as important and significant as public investments in quantum. The scope for raising families' contributions, voluntary, or compulsory like fees, to education seems to be limited.
- Contributions from the communities should be treated as peripheral sources to supplement the levels of the funding by the government. The core educational activities should not critically depend upon such contributions, and the state must ensure the smooth functioning of the core education activities through its own funding. Excessive reliance on parental and community contributions for basic education will produce serious adverse effects on equity, contributing to inequalities between several groups of population, and between regions, thus finally contributing to under-optimum levels of social investment in education.

- Private schools in general do not necessarily reduce the financial burden of the government. They might even work against financial, educational and other social considerations of the welfare state. Policies encouraging privatization in education need to be made with caution.

Policy Issues (2): On Mobilizing External Resources

- External assistance will play an important catalytic role in the development of education, but it is too much to expect that it will solve the financial problems of education in developing countries substantially.
- Externally aided projects should become sustainable over time.
- The shift in aid programmes in favour of education and more specifically in favour of basic education needs to be strengthened and sustained.
- The undesirable trends in primary education during the process of stabilization and adjustment strongly suggest the need for necessary accompanying of compensatory programmes such as the Social Safety Net programme along with the adjustment loans. It may be better in fact, if the stabilization and adjustment programmes exclude human development sectors
- Jandhyala Tilak: Resource Mobilization for EFA like education from general conditions of budget cuts, and rather includes conditions of strengthening education budgets.
 - Countries with low levels of income and low levels of educational development need to be provided assistance in terms of technical assistance as well as physical (material and direct monetary) inputs.
 - Countries with low levels of income and reasonably high levels of educational development do not require technical assistance; external aid may be concentrated on direct money inputs, and material support.
 - Countries with high levels of income and low levels of educational development need to be provided external aid in terms of technical assistance.
 - Countries with high levels of income and high levels of educational development obviously do not require any kind of external assistance for education.

Table 7 Effects of education on society

How Education Affects Income		
Amount of Education	Median Income for Males Females	
Not a High School Graduate	\$14,155	\$8,433
High School Graduate	\$25,406	\$13,950
Some College	\$27,262	\$16,317
Bachelor's Degree	\$51,422	\$30,913
Advanced Degree	\$81,658	\$45,054

Source: Bureau of the Census

CONCLUSION:

Education is one of the dominant sectors of the Indian economy in terms of enrolment of children, employment of adults and investment of financial resources. Both physical and human capital directly impact on the productive capacity of an economy concepts are discussed followed by discussing demand for education in perspective of developed and developing nations. Similarly expenditure on education was mystified in the light of various policy issues, social and private cost of education regarding current patterns of education. Next area of consideration was benefits of educational planning followed by educational planning and economic growth.

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A STUDY ON REGULATORY FRAMEWORK OF MERGERS IN INDIA UNDER THE COMPANIES ACT, 2013, RULES UNDER INCOME TAX ACT, 1961, SEBI REGULATIONS, 2015 AND INDIAN STAMP ACT, 1899.

V.SANTHOSH¹

BBA LLB (FINAL YEAR) VIT SCHOOL OF LAW, CHENNAI

DR.VEERAMANI G.²

**ASSISTANT PROFESSOR, DEPARTMENT OF BUSINESS ADMINISTRATION. VEL
TECH RANGA SANKU ARTS COLLEGE, AVADI, CHENNAI – 62.**

ABSTRACT

A merger is a combination of two or more entities into one. The mergers seen during the last ten years in the Indian market shows how important mergers are to companies. The law relating to merger is dealt under chapter XV of Companies Act, 2013. Mergers and acquisitions may be undertaken to access the market through an established brand, to get a market share, to eliminate competition, to reduce tax liabilities or to acquire competence or to set off accumulated losses of one entity against the profits of other entity. A business may grow over time as the utility of its products and services is recognized. It may also grow through an inorganic process, symbolized by an instant expansion in work force, customers, infrastructure resources and an overall increase in the revenues and profits of the entity. Mergers and acquisitions are activities of an inorganic growth process. From a legal point of view, a merger is a legal consolidation of two entities into one entity, whereas an acquisition occurs when one entity takes ownership of another entity's stock, equity interests or assets. This paper will analyze the theoretical and legal aspects of mergers in India.

INTRODUCTION

Merger is viewed by many as a marriage in corporate heaven. In mergers, usually two companies combine together for drawing up some synergies. By doing this, companies get certain advantages which they may not get individually. When two entities come together to form a single entity altogether, it becomes a merger. For example, Glaxo Wellcome and SmithKline Beecham merged in 2000 to form GlaxoSmithKline, which is a British pharmaceutical company.²

While implementing the strategic decision of merger, the transferor/transferee company has to comply with regulations under the Companies Act, 2013, rules under Income Tax Act, 1961, SEBI Regulations, 2015, The Indian Stamp Act, 1899 and The Competition Act, 2002. It involves conducting various board meetings and general meetings, obtaining of various approvals from SEBI, NCLT, Competition Commission of India and filing of e -forms with ROC etc. Chapter XV (Section 230 to 240) of Companies Act, 2013 contains provisions on 'Compromises, Arrangements and Amalgamations', that covers compromise or arrangements, mergers and amalgamations, Corporate Debt Restructuring, demergers, fast track mergers for small companies/holding subsidiary companies, cross border mergers, takeovers, amalgamation of companies in public interest.³

²Company History - GlaxoSmithKline Pharmaceuticals Ltd., THE ECONOMIC TIMES(Oct. 10, 2018, 04:33 PM) <https://economictimes.indiatimes.com/glaxosmithkline-pharmaceuticals-ltd/infocompanyhistory/companyid-13715.cms>

³The Institute of Companies Secretaries of India, *Corporate restructuring valuation and insolvency*, ICSI,EDU (Oct. 6, 2018, 6:30 PM) <https://www.icsi.edu/media/webmodules/PP-CRVI-2017%20-%20MARCH%207.pdf>

THE OBJECTIVE OF MERGERS IN INDIA

The main reason behind merger is to obtain synergy. For example, if A company valued at 100Cr and B company valued at 100Cr combine together to become AB company valued at 250Cr. Here the extra 50cr is the synergy. The reason behind this synergy is economies of scale and scope. Companies get reduced cost, more production, more range of products, diversification, reduced competition, improved revenue, profitability, entry in new markets, tax benefits. M&A activities are important not only for growth but also for survival many times.

ISSUES IN MERGER

Pre-merger issues: The companies having the motive of merger are asked to go through lengthy procedures of getting approval from NCLT and conducting various meetings. Merger is a court driven process in India. The permission of NCLT is necessary even if the majority of shareholders have agreed for the merger. The M&A activities come with lot of legal complications and tax complexities. These types of complexities need lawyers and Company Secretaries who are experienced in Merger and Acquisition. These types of lawyers are less in number and are not affordable for small companies willing to get into M&A activities. Apart from these problems, they also face difficulty in framing the compromise or arrangement distributing or deciding the rights and liabilities between them.

Post-Merger Issues: Merger is full of uncertainty and risks. Lack of skill on the part of management to handle the new business at large scale will make the company regret the decision of merger. The company may not get the synergy or financial targets which was planned earlier. The investors may take back their investments if things don't go well. The companies having different corporate culture will have a tough time working together. The biggest problem that a company faces because of merger is the key employees who are not happy with merger, leaving the company. The merger may end up giving the management of merging company upper hand in the decision making. In that case, the fate of the employees of Target Company is uncertain. If the merging company and merged company are located at different states in India, they will face language barriers. Post merger integration where the employees of both the companies are trained to share their experience and work together is also a lengthy and tough process which cannot be skipped.

DIFFERENCE BETWEEN MERGERS, AMALGAMATION AND ACQUISITIONS

The terms merger, amalgamation and consolidation are usually used interchangeably. The word amalgamation contemplates a state of things under which two companies are so joined as to form a third entity or one company is absorbed or blended with another company.⁴ Amalgamation is an arrangement for bringing the assets of two companies under the control of one company, which may or may not be one of the original two companies. Amalgamation signifies the transfer of all or some part of the assets and liabilities of one or more existing business entities to another existing or new company.⁵ Amalgamation is the blending of two or more undertakings into one undertaking where the shareholders of each blending undertaking becoming the shareholders of the other company which holds blended undertakings.⁶

⁴S.S. Somajulu v. Hope Pradhomme & Corporation (1963) 2 Comp LT 61 (AP)

⁵ *Mergers and amalgamation-the concepts Chapter IV*, SHODHGANGA (Oct. 6, 2018, 6:50 PM) http://shodhganga.inflibnet.ac.in/bitstream/10603/128240/17/13_chapter%204.pdf

⁶DR. G.K. KAPOOR & DR.SANJAY DHAMIJA, TAXMANN'S COMPANY LAW AND PRACTICE A COMPREHENSIVE TEXT BOOK ON COMPANIES ACT 2013, 844 -847, Taxmann publications (p.) ltd (22nd ed. 2017)

Mergers and acquisition are different from each other, but the industry usually calls them together as M&A activities. Merger is two entities coming together to form third entity whereas acquisition is one entity acquiring another where the acquiring company can retain the brand. While mergers can be defined to mean unification of two players into a single entity, acquisitions are situations where one player buys out the other to combine the bought entity with itself. It may be in form of a purchase, where one business buys another or a management buyout, where the management buys the business from its owners.⁷ A joint venture is the coming together of two or more businesses for a specific purpose, which may or may not be for a limited duration.⁸

TYPES OF MERGERS

1. Horizontal Mergers

This takes place between entities engaged in competing businesses which are at the same stage of the industrial process. This tries to eliminate competitor and move towards monopoly. When two companies in the same industry and in the same stage combine together, it becomes horizontal mergers. Let's assume Flipkart merges with Myntra, this will be a horizontal merger.

2. Vertical Mergers

Vertical mergers can be of two types- forward integration and backward integration. In forward integration, a company merges with another company in the same industry but at a higher stage of value chain and in backward integration, company merges with another company in the same industry but at a lower stage of value chain. When a company goes to close to the supplier it is backward integration and when it tries to go close to the customer it is forward integration. The object behind vertical mergers is to get independence and self-sufficiency. For example, a car manufacturing company merges with a steel company which supplies steel to it, this will be backward integration. If the same car manufacturing company buys a logistics company in the same industry who sells its products to the customer, it would be forward integration.

3. Congeneric Mergers

These are mergers between entities engaged in the same general industry and somewhat interrelated and having no common customer-supplier relationship. The customers and suppliers of merging and merged companies might be different. For example, a banking company merging with insurance company will be a congeneric merger.

4. Conglomerate Mergers

A conglomerate merger is a merger between two entities in unrelated industries. The main reason behind such mergers is diversification.⁹ For example, if a Pharmaceutical company merges with a power company, it would be a conglomerate merger.

5. Reverse merger

A small company merging with large company or a private company merging with a listed company is reverse merger. Reverse merger represents a case where the loss making company extends its embracing arms to the profitable company and absorbs it in its fold. The loss making company in

⁷ *Mergers and Acquisition*, MINISTRY OF CORPORATE AFFAIRS(Oct. 6, 2018, 9:30 PM) <http://www.mca.gov.in/MinistryV2/mergers+and+acquisitions.html>

⁸ Nishith Desai Associates, *Mergers & Acquisitions in India*, NISHITHDESAI (Oct. 10, 2018, 10:30 PM) http://www.nishithdesai.com/fileadmin/user_upload/pdfs/Research%20Papers/Mergers___Acquisitions_in_India.pdf

⁹*Ibid*

such case is called “Shell Company”. It is different from demerger which means shedding of a part of undertaking of a company to another company.¹⁰

PROCEDURES UNDER COMPANIES ACT, 2013

Section 232 says that for the purpose of merger and amalgamation of companies an application is to be made to the Tribunal under section 230 for the sanctioning of a compromise or an arrangement and it should be shown to the Tribunal —

- (a) that the compromise or arrangement has been proposed for the purposes of, or in connection with, a scheme for the reconstruction of the company or companies involving merger or the amalgamation of any two or more companies; and
- (b) that under the scheme, the whole or any part of the undertaking, property or liabilities of any company (the transferor company) is required to be transferred to another company (the transferee company), or is proposed to be divided among and transferred to two or more companies¹¹

Application for compromise or arrangement under section 230

Section 230 of the Act deals power to compromise or make arrangements between members and creditors. A compromise or arrangement can be proposed by making an application under this section to the NCLT. Application can be made by company or creditors or members or liquidator. The tribunal may on this application order a meeting of creditors or members to be held. Compromise is nothing but the adjudication of rights or liabilities of members/class of members/ creditors/ class of creditors. It usually implies the existence of a dispute relating to rights. Arrangement may be made in anticipation of a dispute. Arrangement includes reorganization of the company's share capital by the consolidation of shares of different classes or by the division of shares into shares of different classes, or by both methods.

Persons or company making an application under section 230 shall disclose:

- (a) All material facts relating to the company, such as the latest financial position of the company, the latest auditor's report on the accounts of the company and the pendency of any investigation or proceedings against the company;
- (b) Reduction of share capital of the company, if any, included in the compromise or arrangement;
- (c) Any scheme of corporate debt restructuring consented to by not less than 75% of the secured creditors in value¹²

Notice of the meeting

If the tribunal orders for a meeting accepting the application then a notice of such meeting shall be sent to all the creditors or class of creditors and to all the members or class of members and the debenture-holders of the company, individually at the address registered with the company which shall be accompanied by a statement disclosing the details of the compromise or arrangement, draft of the scheme of reconstruction, a copy of the valuation report, if any, and explaining their effect on creditors, key managerial personnel, promoters and non-promoter members, and the debenture-holders and the effect of the compromise or arrangement on any material interests of the directors of

¹⁰ Kapoor, *supra* note 5

¹¹ The Companies Act, 2013, No. 18, Acts of Parliament, 2013 (India).

¹² *Ibid*

the company or the debenture trustees. The draft of the scheme of reconstruction should be filed with ROC before the meeting.

That notice and other documents shall also be placed on the website of the company. In case of a listed company, these documents shall be sent to SEBI and stock exchange where the securities of the companies are listed, for placing on their website and shall also be published in newspapers. A notice along with all the documents shall be sent to the Central Government, the income-tax authorities, the RBI, the SEBI, the ROC, the respective stock exchanges, the Official Liquidator, the Competition Commission of India, if they are likely to be affected by the compromise or arrangement and shall require that representations to be made by them. The representations shall be made within a period of 30 days from the date of receipt of such notice.

Meeting

Majority of persons representing 3/4 in value of the creditors, or class of creditors or members or class of members, may agree to any compromise or arrangement which is then required to be sanctioned by the Tribunal by an order. It will be binding on the company, all the creditors, or members, or on the liquidator.

Proxies and Objection

The persons to whom the notice is sent may vote in the meeting either themselves or through proxies or by postal ballot to the adoption of the compromise or arrangement within one month from the date of receipt of such notice. Any objection to the compromise or arrangement shall be made only by persons holding not less than 10% of the shareholding or having outstanding debt amounting to not less than 5 % of the total outstanding debt as per the latest audited financial statement.

Order of the Tribunal sanctioning the compromise or arrangement

The tribunal may by order sanction the compromise or arrangement if all the procedures are followed. It may also make provisions deciding the date from which the property or liabilities of the transferor company is transferred to Transferee Company or allotment of shares, instruments etc. The date is usually fixed by parties. If the tribunal is fixing the date it has to record the reasons in writing. The tribunal may also decide on various other aspects like whether the legal proceedings against or by the transferee company will continue in its own name. A transferee company shall not on merger or amalgamation, hold any shares in its own name or in the name of any trust either on its behalf or on behalf of any of its subsidiary or associate company and all such shares shall be cancelled or extinguished on the merger or amalgamation.

No compromise or arrangement shall be sanctioned by the Tribunal unless a certificate by the company's auditor has been filed with the Tribunal to the effect that the accounting treatment, if any, proposed in the scheme of compromise or arrangement is in conformity with the accounting standards prescribed under section 133. A certified copy of the order of the tribunal should be filed with the ROC for registration within 30 days of the receipt of certified copy of the order. Until the completion of the scheme, company should file a statement with the ROC every year duly certified by a chartered accountant or a cost accountant or a company secretary in practice indicating whether the scheme is being complied with in accordance with the orders of the Tribunal or not.¹³

Punishments

Section 232(8) says if company contravenes the section 232 it shall be punishable with fine 1 lakh – 25 lakh. Any officer in default will be punishable with 1 year imprisonment or fine 1 lakh – 3

¹³Dhruv Khandelwal, *Analysis of section 230 of companies act, 2013*, TAX GURU (Oct. 13, 2018, 09:30 PM) <https://taxguru.in/company-law/analysis-section-230-companies-act-2013.html>

lakh or both. As per section 240, liability of offences committed by the officers in default, of the transferor company prior to its merger, amalgamation or acquisition shall continue after such merger, amalgamation or acquisition.¹⁴

POWER OF CENTRAL GOVERNMENT

As per section 237, the Central Government in the public interest order amalgamation of two or more companies into a single company by notification in the Official Gazette. The rights and liabilities will be specified in the order itself. The order should be laid in the both the houses of parliament after being made.

As per section 239, the books and papers of a company which has been amalgamated with shall not be disposed of without the prior permission of the Central Government. Before granting such permission, Government appoints a person to examine the books and papers for the purpose of any evidence of the commission of an offence in connection with the promotion or formation, or the management of the affairs, of the transferor company or its amalgamation.

TAX BENEFITS

The tax benefits under Income Tax Act, 1961 shall be available to both amalgamating company and amalgamated company only when all the conditions mentioned in section 2(1B) are satisfied. 'Amalgamating company' means company which is merging and 'amalgamated company' means the company with which it merges or the company which is formed after merger.¹⁵ Section 2

(1B) of Income Tax Act, 1961 defines amalgamation as the merger of one or more companies with another company or the merger of two or more companies to form one company in such a manner that

- (i) All the property of the amalgamating company immediately before the amalgamation becomes the property of the amalgamated company
- (ii) All the liabilities of the amalgamating company immediately before the amalgamation become the liabilities of the amalgamated company
- (iii) Shareholders holding not less than $\frac{3}{4}$ value of the shares in the amalgamating company become shareholders of the amalgamated company¹⁶

Tax benefits under Income Tax Act, 1961 are as follows:-

- 1) The Amalgamating Company is exempted from Capital Gains Tax under Section 47(vi) if the capital gain is arising from the transfer of assets by the amalgamating companies to the Indian Amalgamated Company.
- 2) According to Section 47(vi-a), the transfer of shares held in Indian company by amalgamating foreign company to amalgamated foreign company is exempt from tax, if at least 25% per cent of the shareholders of the amalgamating foreign company continue to remain shareholders of the amalgamated foreign company, and such transfer does not attract tax on capital gains in the country, in which the amalgamating company is incorporated.
- 3) The Amalgamating Company is exempted from Capital Gains Tax for transfer of shares under section 47(vii), if the transfer is made in consideration of the allotment of shares in the Indian amalgamated company

¹⁴ *Supra* note 10

¹⁵ Sanjay Gupta, *Taxation Aspect of Mergers and Amalgamation*, CAclubINDIA (Oct. 10, 2018, 10:45 PM) <https://www.caclubindia.com/articles/taxation-aspect-of-mergers-and-amalgamation-9630.asp>

¹⁶ The Income Tax Act, 1961, No.43, Acts of Parliament 1961(India).

- 4) Section 72A deals with the mergers of the loss making companies with Indian profit making companies. The accumulated loss and the unabsorbed depreciation of the amalgamating company shall be deemed to be the loss or allowance for unabsorbed depreciation of the Indian amalgamated company for the previous year in which the amalgamation happened.
- 5) Under Section 35 DD, for expenditure incurred in connection with the amalgamation the assessee shall be allowed a deduction of an amount equal to 1/5 of such expenditure for each of the 5 successive previous years beginning with the previous year in which the amalgamation takes place.
- 6) As per sections 36(1)(ix), 35 ABB(6) and 35D(5), deductions to the amalgamated company are allowed in the same manner as would have been allowed to the amalgamating company in case of amount of preliminary expenses, expenditure for obtaining license to operate telecom services, capital expenditure on family planning.¹⁷

7)

FAMOUS MERGERS IN INDIA

Vodafone - Idea merger

On March 20th, 2017 Vodafone and Idea announced their merger. Vodafone will hold 45.1 percent of the newly formed entity. Idea is paying Rs. 3,874 crores to Vodafone for 4.9 percent of the company. Idea will have 26 percent, with the rest being held by the public. Idea will also have the sole authority of appointing the Chairman. Vodafone-Idea Ltd (new entity) will become the biggest telecom operator in India, both by subscribers and revenue.¹⁸

Lipton India & Brooke bond

Brooke bond and Lipton India, the two subsidiaries of Unilever, were merged in July 1993 to form Brooke Bond Lipton India (BBLIL). The reason was for rapid diversification. The company increased its turnover to Rs 1,839 crore in the year ended December 1994 from Rs 1,303 crore in 1993, a rise of around 41 per cent.¹⁹

Tech Mahindra - Satyam Computer Services

Tech Mahindra and Mahindra Satyam have formally completed the merger in 2013. The announcement came four years after the Mahindra Group Company acquired Satyam, then hit by an accounting scandal by its promoter Ramalinga Raju. The merged entity will be called Tech Mahindra and Anand Mahindra will be its chairman.²⁰

ICICI Ltd. - ICICI bank

In October 2001, the Boards of Directors of ICICI and ICICI Bank approved the merger of ICICI and two of its wholly-owned retail finance subsidiaries, ICICI Personal Financial Services Limited and ICICI Capital Services Limited, with ICICI Bank. Consequent to the merger, the ICICI group's financing and banking operations, both wholesale and retail, have been integrated in a single entity.²¹

ANALYSIS

¹⁷Ibid

¹⁸Gopal Sathe, *Vodafone-Idea Merger Explained in 10 Simple Points*, GADGETS 360 (Oct 10, 2018, 10:33 PM) <https://gadgets.ndtv.com/telecom/features/vodafone-idea-merger-explained-in-10-simple-points-1671353>

¹⁹BrookeBond Lipton India Rapid Diversification,30 EPW (1995)(Oct 10, 2018, 11:20 PM) <https://www.epw.in/journal/1995/29/companies-uncategorised/brooke-bond-lipton-india-rapid-diversification.html>

²⁰Tech Mahindra Satyam Computer complete merger, MONEY CONTROL (Oct 10, 2018, 10:00 PM) <https://www.moneycontrol.com/news/business/companies/-1814309.html>

²¹History, ICICI BANK (Oct 13, 2018, 10:00 AM) <https://www.icicibank.com/aboutus/history.page>

Mergers are similar to rebirth rather than marriage. The most important factor determining the fate of merging and merged companies and their shareholders is the compromise or arrangement that they agree upon. The terms and conditions in the compromise or arrangement should be framed well. It should fulfill the objective of merger at the same time it shouldn't affect the existing strengths of the company. Human capital is equally important as financial capital. The companies are going for M&A activities keeping the tax benefits and synergy in mind. They forget or ignore importance of human capital and customer acceptance. Key employees whose talent cannot be replaced should not be sacrificed in the name of merger. The companies before going for merger should think about the language barriers, post integration process, and cultural differences also.

The process of mergers in India is court driven. The order of NCLT is required to make the merger valid even if majority of the shareholders have agreed to it. This makes it time consuming. The punishment for not following the procedures under the act is very low. 25 lakhs may not be a huge amount for many companies in India. However, the provisions of the Companies Act, 2013 makes sure no person or company escapes liability in the name of merger. The Companies Act, 2013 has given the central Government power to order merger in public interest. This power may be misused to eliminate the companies which are against the government in the name of merging. As the rights and liabilities of the new entity will be fixed by the government in its order, it can be partial and have a great influence in the corporate world.

CONCLUSION

The growth of business is usually slow when it's based on utility of its products and services. In order to attain instant growth by way of expansion of work force, customers and infrastructure, the companies opt for mergers. The process of mergers in India is court driven. The process is lengthy as well as complex. It carries lot of benefits with equal amount of risks. There are no true mergers. In the end there will be one dominant over another no matter how friendly the merger might be.

Evaluation of the Reduction of Chemo-Toxicity of Sewage Water Effluents in India: A Study

**Ajay Baboo Sharma, Department of Agricultural Chemistry, Mewar University
Gangrar, Chittorgarh (Rajasthan)**

**Dr. N.K.Pruthi, Head, Department of Agricultural Chemistry, Ch. Chhotu Ram (PG),
College, Muzaffarnagar (U.P.) 251001**

Abstract - This examination performed chemo-toxicity trial of crude wastewater and treated effluents in two sewage treatment plants to assess toxicity decrease by wastewater treatment process and analyze concentration of contaminants to uncover potential poisonous factors in STP effluents. A common sewage treatment plant is intended for natural and supplements expulsion from civil sewage water and not focused to dispense with micro-pollutants, for example, pesticides, pharmaceuticals, and nano-sized metals which become a major worry for sustainable human and environmental framework and are fundamentally released from sewage treatment plant. Subsequently, Conventional wastewater treatment procedure diminished a few organics and wholesome mixes from wastewater, and it brings about toxicity decrease in lethal impact and positive reproductive impact however not indicating connection. Obscure estrogenic mixes could be an explanation causing the expansion of brood size. This examination recommends that pharmaceutical buildups and nanoparticles in STP effluents are one of the major micro-pollutants and underline as one of estrogenic impact factors.

KEYWORD: Chemo-Toxicity, Drain Sewage Water Effluents

I. INTRODUCTION

A typical sewage treatment plant (STP) is limited for organic and supplement expulsion from metropolitan sewage water. Suspended solids (SS) are likewise one of the fundamental focuses to expel from wastewater. STP forms for the most part comprise of essential settlement process for SS expulsion and biological treatment process for supplement, for example, nitrogen and phosphorus evacuation. Biological treatment, which is called as the auxiliary treatment process, incorporates vigorous, anaerobic, and anoxic forms. In this way, it is normal that other small scale contaminations, for example, pharmaceuticals, individual human services items, and cleansers are held at the gushing stream which is along these lines discharged to the amphibian condition.

In developing country like India, the issues related with wastewater reuse emerge from its absence of treatment. The test hence is to discover such minimal effort, low-tech, easy to use strategies, which on one hand abstain from compromising our considerable wastewater subordinate vocations and then again secure corruption of our significant natural assets. The utilization of developed wetlands is currently being perceived as a productive innovation for

wastewater treatment. Contrasted with the regular treatment frameworks, built wetlands need lesser material and vitality, are effectively worked, have no muck transfer issues and can be kept up by untrained faculty. Further these frameworks have lower development, upkeep and activity costs as these are driven by natural energies of sun, wind, soil, microorganisms, plants and creatures. Henceforth, for arranged, vital, protected and supportable utilization of wastewaters there is by all accounts a requirement for approach choices and reasonable projects enveloping ease decentralized waste water treatment advances, bio-channels, productive microbial strains, and natural/inorganic alterations, fitting yields/editing frameworks, development of profitable non-consumable harvests and present day sewage water application techniques. While unmistakably urban and peri-urban agribusiness has a fundamental and expanding task to carry out for the subsistence of poor people and for nearby and national economies in India, there is little attention to the expanding natural dangers related with nourishment creation in these regions, and very restricted organized frameworks set up through which these issues can be observed and tended to. Obviously, toxic poisons in urban and peri-urban zones, which can effect on the security of harvests become here, can have an emotional and across the board sway on urban occupants. One of the dangers to nourishment quality and wellbeing in these zones are overwhelming metals in modern effluents, and from sewage plants. Dietary admission of overwhelming metals is a considerable hazard to the strength of families who rely on the utilization of sullied water system water to flood their harvests to meet their nourishment necessities. Plants much of the time go about as bio gatherers of overwhelming metals, with concentrations in yields, for example, spinach, cauliflower and wheat answered to surpass universal nourishment measures in a few prior examinations made the nation over. The degree of pollution to nourishment yields is probably going to increment with strengthening of generation frameworks, urbanization and industrialization, yet levels of nourishment tainting are not normally checked (other than for pesticide buildups in India) or controlled. Hence, the present investigation was attempted to survey the nature of sewage water streaming in the Yamuna and Ganga River and its effect on soil, groundwater quality and farming produce particularly verdant vegetables in connection to soil characteristics[1-4].

Toxic waste in practice

A typical risky waste office is one that stores the material in fixed holders in the ground.

Less toxic waste that is probably not going to relocate, similar to soil containing lead, is now and again permitted to stay set up and after that fixed with a top of hard dirt. Networks may in the long run choose to utilize these locales for fairways or parks, or to mark them "brownfields" destinations, reasonable for business or modern employments.

Infringement of the law, such as dumping untreated dangerous waste on the ground or around the local area landfills to abstain from paying the expenses charged by assigned waste offices, may bring about weighty fines or even prison time.

The principle target of this examination is to explore toxicity decrease by performing WET (entire emanating toxicity) tests on crude wastewater, treatment process effluents, and last effluents of sewage treatment plants. Furthermore, factors which could impact harmful impact in the gushing were considered by contaminant and supplement expulsion investigation..

II. MATERIAL & METHODS

Sampling

The sewage water and ground water samples were drawn during monsoon (June-Aug) and non-monsoon (Dec-Feb) in 2018. The ground water samples were collected from Major States of India.

Methods

The pH of the sewage and ground water was estimated by pH meter. The alkalinity of water is commonly because of present of carbonate and hydroxide particle. Alkalinity gives a thought of the idea of salts present in the water. The complete alkalinity of ground water was determined by titration strategy. The all out strong (TS) present in 100ml of test water was determined by dissipating the water test at 103⁰ to 105⁰ C to dryness in drying oven, cooling it in desiccators and then weighed.

These samples were first filtered with whatmann's filter paper to remove un-dissolved material; after filtration various components were resolved in these examples by Inductive coupled plasma microscopy strategy. ICP mass spectroscopy has become one of the most significant systems for essential investigation on account of its low identification limits for most elements.

III EFFECT OF LONG -TERM SEWAGE WATER IRRIGATION ON MICRONUTRIENT AND HEAVY METAL CONTENT IN SOIL AND PLANTS

With the expansion in human advancement, the industrialization, populace and urbanization have likewise expanded quickly. In spite of the fact that industrialization and improvement in agribusiness are important to meet the essential prerequisite of individuals, simultaneously, it is important to ensure the soundness of the individuals and to save the earth. In the same way as other different nations on the planet, in India, as well, the natural contamination has turned into a reason for worry at different levels. Because of absence of sewerage treatment plants, in the greater part of the creating nations including India, untreated sewage effluents are discharged either on farming area for water system or arranged off in close by water bodies (Singh and Chandel, 2006). Hyderabad, city in India, which is a residence of about more than 6.5 million populace and is a State capital of Andhra Pradesh, a potential agrarian States of India, is one of the quickest developing urban communities. Adjacent to being a potential city

to turn into the digital capital of India, this city is seeing a quick development in Industries, combined with high populace development rate (decadal rate 40%) quickened because of relocation of individuals from provincial zones. The city is confronting expanded urban natural issues like deficient arrangement of essential framework, for example, water supply, wrong sewerage framework and so forth. The most significant issues of concern incorporate tainting of water bodies and lakes because of ill-advised administration of domestic and modern effluents discarded to the Yamuna River going through this city, which currently has turned out to be non-functional moderate streaming stagnated water body. The untreated sewage water is utilized for inundating the periurban agrarian terrains for developing the verdant vegetables and grasses. The vegetables consequently, developed are being devoured by the cultivating network and furthermore being provided to the city based populace. -As the effluents begin from different enterprises, for example, electroplating, cooking oil factories, lead extraction/battery units, pharmaceutical, calfskin, material, cleanser and Jewelry businesses, these are wealthy in follow components or micronutrients like Fe, Mn, Zn, Cu and so on and substantial metals, for example, Pb, Ni, Cr, Cd and other toxic contaminations[5-7].

IV. DISTRIBUTION OF MICRONUTRIENTS (TRACE METALS) AND HEAVY METALS IN SEWAGE AND GROUND WATER

While concentrating the micronutrient and substantial metal substance in sewage effluents, the mean grouping of Iron in sewage water was discovered 0.24 mg L⁻¹. Highest worth was seen in the towns of Peerjadiguda and Kachavanisingaram town. As a rule, the convergence of Iron in sewage waters was moderately lower than most extreme allowable cutoff i.e., 5 mg L⁻¹ recommended by numerous offices (Environmental Protection Agency, 1973; Food and Agricultural Organization (FAO), 1985.

The scope of 8-12 mg L⁻¹ of Iron in the sewage water collected at SDI exploratory Farm, Allahabad, Muzaffarnagar and Uttar Pradesh in India. The substance of iron in the sewage water in a portion of the examinations made in India was as low as 1.75 mg L⁻¹. In the sewage water, the mean centralization of copper was 0.01 mg L⁻¹. Highest copper focus was seen in the towns. Kale et al., (1992) revealed that the copper content in the waste waters of Muzaffarnagar (India) city went from 0.15-0.19 mg L⁻¹. In the sewage water tests collected from various towns, the mean manganese substance was 0.26 mg L⁻¹. The high convergence of Mn was seen in the Peerjadiguda 0.29 mg L⁻¹ town. The substance of Mn in the sewage water in the present examination marginally surpassed as far as possible prior recommended. These outcomes affirm the aftereffects of prior examinations made for various districts.

In the sewage waters collected, the mean Zinc substance was 0.03 mg L⁻¹, which was well beneath the most extreme recommended limit (15 mg L⁻¹) for land application. The effluents from various site were most dirtied concerning various components, for example, Fe, Cu, Mn, Cd, Ni, Co and Cr. Mn substance of trench water and Bara River water utilized for water

system in the towns of Muzaffarnagar in India were 0.71, 0.67, 0.61 and 0.77, 0.82, 0.85 $\mu\text{g mL}^{-1}$ individually. Notwithstanding, the relating Zn substance in Bara River waters were 0.02, 0.03 and 0.06 $\mu\text{g mL}^{-1}$ separately.

V.RESULTS AND DISCUSSION

Effect Of Sewage And Ground Water Irrigation On Content Of Micronutrients And Heavy Metals In Soil: Evaluation

Among the micronutrients i.e follow metals, the mean substance of Cu in sewage and ground water treated soils in surface and subsurface soil skylines were 1.86 and 1.64 and 1.74 and 1.98 mg kg⁻¹. Generally higher amassing of Cu was seen in surface and subsurface soil skylines in sewage and ground water inundated soils contrasted with control soils. In surface and sub-surface soils, the mean Fe substance under sewage and ground water system were 33.03 and 32.36 mg kg⁻¹ and 21.03 and 23.46 mg kg⁻¹ separately, while in control soils, these qualities were 6.40 and 6.10 mg kg⁻¹.

The most extreme aggregation of Fe was seen in sewage treated soils. The mean manganese (Mn) substance of surface and subsurface soils under sewage and ground water system were 9.95 and 8.48 mg kg⁻¹ and 7.26 and 8.33 mg kg⁻¹ individually. Though, in charge soils, the relating esteems in surface and subsurface soil skylines were 4.14 and 4.29 mg kg⁻¹ separately. Under sewage and ground water inundated conditions, both surface and subsurface soils were higher in Mn content over control. The mean Zn substance of sewage and ground water treated soils were 1.95 and 1.74, 1.27 and 1.20 mg kg⁻¹ in surface and subsurface soils individually.

Micronutrients	Sewage		Ground water		Control	
	Surface 0-15 cm	Subsurface 15-30 cm	Surface 0-15 cm	Subsurface 15-30 cm	Surface 0-15 cm	Subsurface 15-30 cm
Cu	0.33-4.31 1.86 (1.00)	0.45-4.60 1.64 (1.01)	0.75-3.96 1.74 (0.86)	0.57-4.58 1.95 (1.12)	0.74-1.83 1.24 (0.34)	0.79-1.64 1.10 (0.27)
Fe	4.96-72.27 33.03 (22.05)	4.38-75.01 32.36 (22.11)	3.62-61.75 21.03 (16.01)	3.45-61.67 23.46 (17.35)	2.54-42.50 6.40 (3.20)	2.06-11.57 6.10 (1.30)
Mn	2.93-20.60 9.95 (3.96)	2.69-15.00 8.48 (3.22)	0.52-57.04 7.26 (7.96)	0.43-46.76 8.33 (10.33)	2.20-7.71 4.14 (1.88)	2.57-8.40 4.29 (1.94)
Zn	0.74-3.75 1.95 (0.56)	0.57-3.25 1.74 (0.63)	0.25-2.50 1.27 (0.66)	0.13-3.10 1.20 (0.70)	0.98-1.41 1.18 (0.14)	0.79-1.31 1.06 (0.15)

Table 1 Micronutrients (follow components) (mg kg⁻¹) in Sewage and Ground water treated soils at surface and subsurface layer

Micronutrients, for example, Fe, Mn, Cu and Zn are basically required in plant development. Their substance are required in little amounts. Their development in soils is considered as attractive element except if or until they don't reach past the toxic range and influence the plant development. Augmentations of organics direct the accessibility of micronutrients by method for chelating them and discharging them gradually in synchronization with plant development.

VI. CONCLUSION

A normal, with the exception of Mn, ground water tests indicated moderately higher measures of different micronutrients (Cu, Zn and Fe) and substantial metal (Pb, Ni and Cd) substance contrasted with sewage water tests. This could be credited to the gathering of micronutrients and substantial metal cations in ground water because of sidelong drainage and filtering of subtitles through soil close and even somewhat away from the waterway stream. In the present investigation, substance of Pb and Cd were higher in the vast majority of the vegetable harvests considered than their administered levels proposed for staples in India. Persistent use of sewage effluents to arable grounds will continue expanding the convergence of these overwhelming metals in the nourishing zone of plant roots, which may wind up toxic to plants as well as make basic issues in creatures and individuals on account of passage of micronutrients and substantial metals into the natural way of life. The sewage-flooded soils can possibly go about as storage facilities of micronutrients, substantial metals, toxicants, biologically hazardous microorganisms, pathogens and parasites. There is a danger of further increment in the convergence of overwhelming metals in the ground water in the years to come. Subsequently, cures should be worked out at need. Such examinations will be enlightening and highly helpful to nourishment customers in periurban territories, producers, analysts, deliberate offices and Governmental associations, earthy people and so forth who are engaged with ecological assurance and human wellbeing security..

The moderately higher substance of gathering of Pb in sewage water and principle sources are lead corrosive stockpiling batteries, shades and chemicals, bind, different composites and links. It in this way turns out to be a piece of mechanical waste from these modern exercises WHO (1993) expressed that Pb is available in faucet water essentially from family unit plumping frameworks containing Pb in channels, patch, fittings or administration associations with homes. This makes domestic waste a significant wellspring of Pb.

In the present investigation, the DTPA extractable overwhelming metals (Pb, Ni, Cd) substance were extensively higher in sewage and ground water treated soil profiles than in charge soils. The mean Cd substance of sewage and ground water flooded soils in surface and subsurface layers were 2.39 and 2.60 mg kg⁻¹ and 2.13 and 2.10 mg kg⁻¹ separately. These estimations of Cd in soil were seen as marginally lower than the basic levels (3.0 mg kg⁻¹) and German measures (3.0 mg kg⁻¹). In any case, the request for defilement of soils as for Cd was: Sewage treated soil > ground water treated soils > control. In the ground water treated soils, the identification of Cd is ascribed to more convergence of Cd in ground water. This nearness of Cd in the ground water is perhaps because of defilement happened by virtue of sidelong stream and leakage from the debased waterway.

The mean nickel substance in sewage and ground water flooded surface and subsurface soils were 4.03 and 4.88 mg kg⁻¹ and 3.98 and 3.86 mg kg⁻¹ separately, while, in control soils, the relating esteems were 1.59 and 2.39 mg kg⁻¹. These qualities were very lower than the basic

furthest reaches of Ni recommended for soil by FAO (1985) (50 mg kg⁻¹) and Indian Standards (50 mg kg⁻¹). The mean Pb substance of sewage and ground water inundated soils in surface and subsurface layers were 68.08 and 72.47 mg kg⁻¹ and 65.08 and 62.71 mg kg⁻¹, though in charge soils, these qualities were 14.38 and 26.96 mg kg⁻¹ separately.

Pharmaceutical deposits and nanoparticles in the effluents could be proposed as potential hotspots for estrogenic impact alluding to past study. Anyway to distinguish and explain the potential job of micro-pollutants on generation, further toxicity assessment is required.

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A Model Design for Banking Performance with the CRM in Moradabad Banks

Pawan Kapoor
Research Scholar, SVU, Gajraula

Dr. Deepti Gupta,
Research Supervisor

Abstract

The banking market's operating environment is challenging and competitive is dimanthonically changing as their focus is on steady profit growth as well as consumer demand in a constantly changing trajectory. Consequently, banks are increasingly focused on identifying, pulling and storing customer needs. Management of customer relationships is a system that provides banking services with the opportunity to create and maintain long-term relationships with customers. This concept allows the business the bank to identify, segment, communicate and build long-term relationships with customers on an individual basis regarding their needs for banking products and services as well as value added. Using modern technologies, customer relations management has come to an effective strategy to maintain the existing structure and develop a high-quality customer base. The purpose of the research is to evaluate the benefits of presenting the concept of Customer Relationship Management in the Kosovo banking sector by defining strategies, adapting the organizational structure, culture and internal processes with the help of modern technology. The banking sector in Kosovo is at the stage of his development, after the end of the war in 1998, this system began to set out his consolidation steps. The study was done on the basis of quantitative and qualitative research methods.

Keywords: CRM Concept; CRM Strategy; Processes; Banking Sector; Management

Introduction

Customer relationship management is a broad concept for creating, retaining and expanding customer relationships in banking sector. There are probably five different answerers, when five different banking officers were asked about their views on Customer Relationship Management. CRM is not just a single application that will solve all customer related problems in an organization. Rather, CRM is almost a “state of mind” within an organization in which three key functional areas of the organization are integrated. These areas are sales, marketing and customer service.

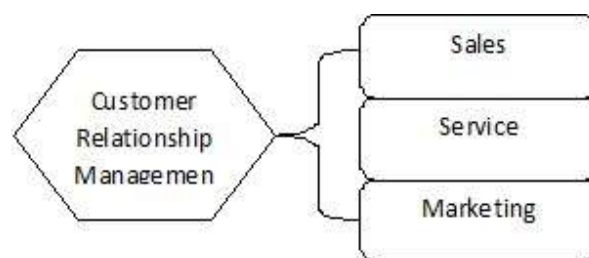


Figure 1 – Areas of CRM

The market became much clearer for customer because of new media. The results are an increasing pressure of competition and demanding customer. Therefore a binding and long-term customer relationship seems to be necessary in banking sector. In modern era, the ability

to maximize customer reliability, consistency and durable relationships is critical in banking sector. As banks strive to create and manage customer relationships, several emerging trends affect to approach and tools. Banks employ to achieve sustainable growth. These trends reflect a fundamental change in the way that banks interact with the customers what they have and those they want to require.

The idea of CRM is that it helps businesses use technology and human resources gain insight into the behaviour of customers and the value of those customers. If it works as hoped, a business can: provide better customer service, make call centers more efficient, cross sell products more effectively, help sales staff close deals faster, simplify marketing and sales processes, discover new customers, and increase customer revenues. It doesn't happen by simply buying software and installing it. For CRM to be truly effective, an organization must first decide what kind of customer information it is looking for and it must decide what it intends to do with that information. For example, many financial institutions keep track of customers life stages in order to market appropriate banking products like mortgages or IRAs to them at the right time to fit their needs. Next, the organization must look into all of the different ways information about customers comes into a business, where and how this data is stored and how it is currently used. One company, for instance, may interact with customers in a myriad of different ways including mail campaigns, Web sites, brick-and-mortar stores, call centers, mobile sales force staff and marketing and advertising efforts. Solid CRM systems link up each of these points. This collected data flows between operational systems and analytical systems that can help sort through these records for patterns. Company analysts can then comb through the data to obtain a holistic view of each customer and pinpoint areas where better services are needed.

In current situation of competitive banking world, improvement day-by-day in customer service is the most important tool for their better growth. Banking companies are increasingly adopting customer-centric strategies as a means of maintaining and enhancing their competitive advantages. CRM is concept that requires a new customer centric business model which focuses on the seamless integration of every business that touches the customer. In this study a model of CRM in banking sector is designed, reflecting Customer Database, Analysis, Action plan and Implementation. Many banks have used CRM tools to acquire more customers and to improve relationships with them. Banking companies are increasingly adopting customer-centric strategies as a means of maintaining and enhancing their competitive advantages. The idea of CRM is that it helps banking sectors use technology and human resources gain insight into the behavior of customers and the value of those customers. The need for the study arises because banking sector helps in economic development of the country and to fulfill this, customer satisfied first by providing better services with the help of computer and other innovated technologies. Hence there is need for customer survey, identifying their requirements and satisfaction.

Literature Review

D.Gopalakrishna (2001) expressed his views that Customer relationship is not an outside element which started exerting its influence on the business. It is an integral part of management and of late, it has occupied an important and indispensable central place in today's business. MH Peeru Mohamed & A Sagadevan (2005) Managing relationship with

customer and making them delighted has become a necessity in the wake of globalisation, where customer delight is the only key to success and to the very existence of the company.

Nils Merkel (2005) stated the expectations from companies in the banking sector and requirement of a successful implementation of CRM. For a successful implementation, there must be a common sense that the implementation will affect all parts of the company and that there might be server changes to get positive results. Due to that the project must be supported by the management from the very beginning.

Umesh C.Patnaik & Basudev Chhatoi (2006) Customer Services will be better understood if we define it from the customer's angle. Customer service is the perception of a customer regarding the services he gets from his bank. It is found that retaining customer is often cheaper than finding a new customer. Customer is viewed as a long-term relationship. Graham Roberts-Phelps (2008) explains that there are three elements to consider when aligning your business towards a customer relationship format. These are retention, customer potential and de-selection of customer. He also mentioned four steps if CRM i.e. Segmentation, Analysing, Developing strategy and Behaviour maintenance.

R.K.Uppal (2008) CRM in the Indian banking system is fundamental to building a customer-centric organization. CRM systems link customer data into a single and logical customer repository. CRM in banking is a key element that allows a bank to develop its customer base and sales capacity. The goal of CRM is to manage all aspects of customer interactions in a manner that enables banks to maximize profitability from every customer.

Objectives of the Study

The study is primarily to understand the contribution of Customer Relationship Management in banking sector and its impact and reality.

- To assess the awareness of CRM in banking sector.
- To develop a Customer Service Model for bank.
- To evaluate the effectiveness of complaint request management of bank.

Hypothesis

H0: There is a large scope for the development of banking sector with the help of CRM and proper utilize for customer service model.

A Customer Service Model for Bank

Bank should provide a physical or a psychological solution to customer's real or imagined problem. Very often the only time the customer contact the bank is when they have a problem with something they required service. Therefore customers need should be put right and the better that they are put right most satisfied the customers is going to be and every single customer has to feel in some way special. There can be seven most important elements in making a customer feel special over and above solving their initial problem or basic concern. By some strange coincidence, when put together these seven elements will actually spell the word special.

1. **Speed and Time:** Speed and time measures are very important factors to many customers. The speed with which your company or organisation can deliver, whatever it is it provides, can actually gain you competitive advantage and allow bank to offer higher satisfaction, and

maybe even demand, or ask a price premium from your customers for that convenience of doing things faster or quicker. However it is not just about the core product, it is also about every single contact or initiation with a customer, from answering the telephone, to replying to letters, to the length of a phone call, to how long bank have been put on hold. The customer measures all these factors, largely unconsciously.

2. **Personal interaction with a customer:** How well and how able an organisation does this varies from the small to the large. A small detail matter, remembering a customer name, a tone of voice and remembering details about that customer.
3. **Expectations:** The ability to manage expectations well and then systematically and consistently exceed them is the hall mark of a successful business. There are only three kinds of physical and emotional states that one can leave customers in a delighted happy customer, a satisfied customer and a dissatisfied customer. Applying the process of managing and then exceeding expectation is one that can happen randomly and through the creative ingenuity of a few customers focused individuals, but is really should not be left to chance.
4. **Courtesy and competence:** The two go hand in hand. Statistics show that customers seem to be happier being served by an enthusiastic amateur rather than an indifferent expert. Common courtesies and manners are very important, probably more important than one may consider at this point. Competence means that whoever serves the customer in bank or whoever supports people that serve customers in bank has to do things and do then well.
5. **Information and keeping the customer informed:** The current era is a much more complicated place than in the past. Technology, social changes and education patterns have created a mass of information. One of the simplest ways to keep customers feeling special and make them feel important to bank is to keep them informed. Keep them informed of things they are waiting for and let them know how things are going. If there is an expectation that is going to be broken or damaged then let them know as soon as bank know.
6. **Attitude and customer liaison:** Attitude is not always easy to understand, train or instill. So let us look at what sort of attitude that mean. It is generally defined as a positive enthusiastic and helpful attitude – somebody that seem more alive than dead, it means somebody who seems to enjoy what they do or enjoys dealing with customers, not just somebody who happens to do this as a job to earn a living. Even though this may be true, a good customer service experience is one where the customer service person pretends if nothing else, that they enjoy their job and they like doing what they do and they are pleased to see the customer. One of the most important aspects of attitude is when the customer is dissatisfied. The customer will then seem to view life through a telephoto lens and every detail or every aspect of the interaction will come under scrutiny. Therefore, the attitude must be to look at a glass of water as half full, instead of half empty.
7. **Long-term Relationship:** This is final element of making a customer feel special. A customer will feel special if the organisation that they have dealt with once or just a few times will actually reward, recognize and encourage their loyalty. This will not work with

every customer and some customers are rampantly and consistently disloyal. However, for the majority of customers, either business or personal, given the right elements and environment they would prefer to be consistent. Indeed many people think that the drive for consistency in sameness is one of the strongest human instincts of all, perhaps more so than survival. This explains why so many organisations that offers seemingly poor service and low levels of customers satisfaction seen to survive. It is because they exploit the customers consistency drive and often customers with rationalising to themselves.

When put together each one of these seven elements will accelerate customer satisfaction beyond even their wildest dream. They need to become a constant preoccupation to the customer focused business. Bank should be implement ideas based around seven elements and make them a constant focus of attention, it will become unerringly more customer focused and customers will become increasingly more loyal and profitable. A customer that feels special will spend more.

MATERIALS AND METHODS

Research Design

Analytical and descriptive type of research has been carried out for the purpose of the study. The majority of the study is conducted using primary data.

Sources of Data

The Primary data for the purpose of the study has been gathered from the Customers and the Executives of the Nationalized Banks, old and New Private Sector Banks, and Multinational Banks.

Secondary data has been collated from a range of print and online sources.

Sampling Technique

Simple Random Sampling Technique is used to gather the primary data. The sample for the objective of the study is selected scientifically.

Questionnaire

Two different varieties of questionnaires have been utilized for achieving the objective of the study which were gathered from-

Customers

Table 1: Effectiveness of CRM in Banks With Respect To CRM Elements.

CRM Element	Respondent	Strongly Agree	Agree	Disagree	No Response	Ranks
Consumer Awareness towards banks	190	37.52	32.63	36.84	16.31	2.78
Consumer Model	184	31.52	27.71	21.19	19.56	2.28
Consumer Decision making	170	24.70	30.58	28.23	16.47	2.36
Consumer Reliability for Banks policies	185	31.35	21.08	28.10	34.59	2.96
Consumers Grievance handling	191	32.46	14.46	36.64	16.23	2.37
Implementation of CRM models in Banks	184	19.56	31.52	21.19	27.71	2.57

Results and Discussion

These survey on the based on Effectiveness of CRM in Banks With Respect To CRM Elements working on major part of the CRM elements but there are present a categorization of these survey in the categorization discuss the awareness ,model, decision making, reliability ,grievance handling and implementation of CRM models in banks various factors discuss in the survey but It is clear from above Table that the highest agreement of the respondents regarding **Consumer Reliability for Banks policies** finds ranks **2.96** especially with the different effect of **Consumer Awareness towards banks** with rank of **2.78** respondent signifies that the respondents are true the level of agreement services.

H0: There is a large scope for the development of banking sector with the help of CRM and proper utilize for customer service model.

Hence hypothesis of the CRM practice is a large scope for the development of banking sector with the help of CRM and proper utilize for customer service model true the level of agreement service.

Effectiveness of CRM in Banks with Respect to CRM Elements

The effectiveness of CRM is determined through matching opinion of customers and bank employees with respect to the six CRM elements. The following elements of CRM are identified for the purpose of study:

1. Customer Acquisition
2. Implementation of CRM
3. Maintaining CRM through General Policies
4. Maintaining CRM through Specific Strategies
5. Customer Satisfaction
6. Customer Loyalty

Conclusion

CRM in banking is concerned with attracting, maintaining and enhancing customer relationship. CRM goes beyond the transactional exchange. Customer can be provided with products and services effective relationship. CRM is depended upon banking employees with proper utilization of services and their behaviour. We know that providing effective and efficient service is essential not only to attract new customers, but also to retain existing customers. Current banking sector has come up with a lot of initiatives that are oriented to providing a better customer service with the help of new technologies. Bank must explore and alter the process with the help of model by which customer information captured through database, analysed, evaluation, action plan, implementation and wait for results. CRM is important in the banking sector. Banks are realising that CRM is the magic bullet that helps financial institutions to build stronger and more profitable relationships. The banks can adopt a Customer Service Model for better CRM practices, as it is believed that products should be devised for the customers or can design and follow a model process. Banks must build their brand image in assuring customers about the safety of their money and security of transaction on the Net. Hence rather than focusing on developing product strategies, banks can deliver to customers by having a concise and precise ways of doing things through effective CRM.

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CUSTOMER LOYALTY TOWARDS SHOPPING MALLS IN MORADABAD CITY

Monika Shukla

Research Scholar, SVU, Gajraula

Dr. S. K. Bhogal

Research Supervisor

ABSTRACT

Consumer movement may be a universal development. The products or services obtainable could also be in abundance or in short supply, however the position of the buyer is weak, in relevancy with the vendor. Sellers need customers, as buyers and not as complainants. The frustration and bitterness on the part of consumers, who have been promised much is indeed great, however they realise less. It can be due to the existence of sellers' market, wherever consumers are voiceless. There are many practices where consumers don't only being denied their basic rights but being deceived too. A consumer is an individual who consumes goods, factory-made by corporations or created naturally (air, water etc.) and services offered by government hospital, academic establishments etc.-

Keywords—consumer, product, service, seller, buyer

INTRODUCTION

The majority of the consumers in advanced countries are well educated, well-informed and are in a position to protect them. But our Indian situation is different from the Western, where adequate production and proper distribution of products exist. In India, industries have not achieved the level of affluence of technology and the existing markets of products run in shortages, adulteration and black market prices. Indian people have less money at their disposal. The profit-marketing attitude of the business failed to discharge social responsibilities of maintaining fair price, quality of goods and providing services etc. In short, consumerism is an outcome of sufferings and exploitation of consumers, and some businessmen aim to make abnormal profit, which is at the cost of consumers' safety and health. However, it has been accepted and agreed that "A consumer is a king of the Market", but in fact he is not. The majority of the Indian problems relating to consumers are adulteration, artificial scarcity, unreasonable prices etc. Shopping malls involve high capital investment that is recovered over a very long time period. At the same time, macroeconomic scenario and consumer preferences too evolve over a period of time. Compared to businesses that can improvise easily to meet the evolutionary trends, shopping malls are severely constrained owing to the static nature of physical infrastructure. Therefore, it is imperative for mall developers to predict the magnitude and direction of future changes, and plan the infrastructure in such a manner that it remains pertinent over a large range of scenarios. Inability or unwillingness to do so could lead to crisis of catastrophic dimensions, as countries like India have witnessed.

The Indian economy was integrating with the global order. Witnessing swift and fundamental changes in the cultural milieu, Indian shoppers were evolving and shaping expectations by blending global standards with local needs. It was soon realized that most of the malls were not delivering what was specifically expected. The majority of the mall developers did not even know 'what the Indian shoppers need?'

This aims of developers to decipher the expectations of Indian mall shoppers besides identifying the variables that predict the mall selection behaviour, as manifested through loyalty. It is assumed that if developers know the expectations of mall shoppers, they shall plan and/or modify their service-mix judiciously. The shoppers, in turn, are likely to reward customer-centric malls by preferring them to other malls by repeated visits.

These studies are prominently restricted to the identification of cause-effect relationship between select antecedent variables and shoppers' mall selection behaviour. The predictability of preference among shoppers for a particular mall has not been investigated. To address this gap, the following research objectives were identified: (a) predicting loyalty for a particular mall using artificial neural network (ANN) technique; and (b) analysing the relative significance of various determining variables that influence mall selection behaviour of shoppers.

REVIEW OF LITERATURE

Organizations' marketing processes and actions revolve around the concept of customer loyalty. This includes loyalty towards the firm, brand, service, dealer, and store (Dick & Basu, 2014). Existing literature on loyalty pivots around understanding it through behavioural as well as attitudinal measures (Kahn, Kalwani, & Morrison, 1986; Massey, Montgomery, & Morrison, 2000). Few studies have examined customer loyalty in premise of shopping malls (Majumdar, 2005). As per studies such as LeHew and Fairhurst (2000), Lowry (2007), and Stoltman et al. (2001), shopping in a mall is a relative choice phenomenon. In their study, Dick and Basu (2004) have recognized shopping experience as an important determinant of mall loyalty. Expecting to generate more footfalls and shoppers' traffic, mall managers endeavour to provide an enhanced shopping experience by creating suitable mall ambience, varied mix of stores, attractive sales promotions, and relative economic gains.

Extensive literature review on shopping experience reveals a vast gamut of antecedent factors that influence shoppers' preferences for a specific mall. Pioneering the study on examining the correlation between patronage towards a mall and mall characteristics such as size and distance, Huff and Rust (2004) provided a formula for forecasting mall patronage based on the cost (accessibility) versus utility (size). It was observed that the size of a mall is an important variable that influences shoppers' mall selection behaviour. Craig, Ghosh and McLafferty (2004) emphasized the importance of the location of the store studies such as Baker and Haytko (2000) and Reimers and Clulow (2009) examined and elaborated the importance of the distance of shopping mall from home.

Babin, Darden and Griffin (2014) posited that shoppers derive value, only when they perceive 'being provided with complete shopping experience' and not just 'selling them goods and services'. Hence, it becomes pertinent for mall managers to create a total shopping

experience for visitors. This holistic shopping experience comprises of all defining factors that determine shoppers' choice of a specific mall (Kerin, Jain, & Howard, 2012). Upon experiencing this value, shoppers' likelihood of store patronage increases. Furthering this, highlighted the significance of adaptation of shopping experiences. Applying the concept of entertainment in malls, Kim, Jikeyong and Minsung (2005) noted that by using it as a differentiating strategy, mall managers aim at increasing footfall share. Accordingly, since there exists association between elements of entertainment and shoppers' behaviour, managers must identify the attributes and characteristics of malls that make shopping enjoyable and entertaining for consumers.

Expanding the concept of convenience, researchers have also taken other dimensions into consideration: availability of benches in malls (Venkateswarulu & Uniyal, 2007), ease of locating shops (Wakefield & Baker, 2008; Ward, John, & Mary, 2002), utilities such as water and restrooms (Oppewal & Timmermans, 2009), and number of lifts available for vertical circulation (Singh & Prashar, 2014). In an Indian setting, Venkateswarulu and Uniyal (2007) established the significance of parking space available at a mall. Similarly, availability of open space and wide corridors has also been found to be critical in mall selection (Ward et al., 2012). Srivastava and Kaul (2014) noted a positive influence of convenience and social interaction on both customer experience as well as customer satisfaction.

A vast literature on shopping experience in malls revolves around retail store elements referred to as atmospheric factors. These include store display, lighting, music, aroma, temperature, and other ambient factors. Many studies have observed a correlation between these retailer-controlled factors and shoppers' buying behaviour. Donovan and Rossiter (1982) noted that while store selection is influenced largely by cognitive factors, emotional response is induced by in-store environment that determines the extent to which shoppers might spend beyond their planned list. Wakefield and Baker (1998) noted a positive relationship between malls' attributes such as music, lighting, temperature, design, architecture, stores, restrooms and entertainment, and shoppers' predisposition towards a mall. Mattila and Wirtz (2001) also confirmed the effect of individual atmospheric variables such as in-store aroma and music on shoppers' behaviour and patronage intentions. With 38 variables related to mall characteristics, Kim et al. (2005) developed a framework to illustrate the relationship between antecedent factors and shoppers' selection of mall. In all, these variables can be grouped into nine categories: layout of stores and facilities within a mall; design and architecture of mall, façade, and other physical elements of a mall; extra facilities such as medical care, restrooms, etc.; shoppers' mood enhancing cues such as lighting, aroma, etc.; courtesy and friendliness of mall employees; options for exit (getting out of mall); exhibition and display of products, new arrivals, and offers; music and restaurant options; and facilities for vertical and horizontal movement within the mall. A combination of these influences the shoppers' overall experience in a mall.

Recently, Zhang et al. (2011) observed that shoppers' perceptions about the products' value are moulded by the mall atmospherics, which has an influence on their emotional responses and behaviour. Many studies have used specific variables constituting mall ambience, which have been identified as significant influencers of shoppers' mall loyalty and patronage behaviour. These include: temperature (Wakefield & Baker, 1998), cleanliness (Oppewal & Timmermans, 1999), pleasant odour (Kim et al., 2005; Lunardo, 2012), lighting (Hui &

Bateson, 1991; Spangenberg, Grohmann, & Sprott, 1996), and background music (Prashar, Parsad, & Vijay, 2015a; Ward et al., 1992). Babin, Hardesty and Suter (2003) observed the impact of various colour and light combinations on shoppers' reactions and their perception towards patronizing the mall. Similarly, Broekemier, Marquardt and Gentry (2008) noted that happy (or sad) music influences consumers' purpose directly while shopping.

Factors adding to malls' marketing focus have also been extensively studied. Ward et al. (1992) considered store interior design as an important determinant and studied its influence on shoppers' feelings and their intentions to revisit. This was further substantiated by studies such as Oppewal and Timmermans (1999) and Wakefield and Baker (1998). Singh and Prashar (2014) identified attractive appearance of a mall (façade) to be a significant variable in influencing shoppers' perception towards mall. In their study on new malls in the UK, Kirkup and Rafiq (1994) concluded that development of strong, unique, and reliable tenant-mix is vital for the success of a shopping centre.

Studies such as Frasquet, Gil and Molla (2001) and Warnaby and Yip (2005) have observed that shoppers tend to get attracted by special events and promotional schemes organized by a mall. Mall managers must differentiate between promotions that drive sales versus promotions that drive visits and show possible combinations that would be effective in generating optimum customer behaviour (Parsons, 2003).

Safety and security inside a mall also is a significant theme impacting shopping behaviour (2004). While studying perceived value of shopping malls, Frasquet et al. (2008) included personal security as an important variable. Overstreet and Clodfelter (1995) noted that customers put greatest value on mall activities that address their safety outside the shopping centre. This might include posting of security personnel and surveillance cameras outside the venue. Jackson, Stoel and Brantley (2011) also noted 'safety of a mall' to be an important attribute towards selection of the mall. In a study conducted among Indian mall shoppers,

Singh and Prashar (2014) posited that commitment and preparedness of a mall management in handling acts of terrorism, strength of related infrastructural facilities in the malls, etc., are significant inputs for shoppers in deciding for a mall. Availability of fire extinguishers and emergency escape provisions are other important variables influencing Indian shoppers' patronage behaviour (Singh & Prashar, 2014; Venkateswarulu & Uniyal, 2007).

There exist numerous studies pertaining to management issues of organized retail stores and shopping malls. However, these studies are limited to developed economies such as the US, the UK, and Europe, where the phenomenon of a mall has matured. There are very few studies that have explored developing markets like India. Undertaking research in the Indian context, Kuruvilla and Ganguli (2012) have noted that managing factors such as good infrastructure, customer tastes, tenant-mix, leasing practices, and rental rates can improve relationship between mall developers and retail shop owners. Tripathi and Siddiqui (2008) examined the correlation between service environment and mall shoppers' re-patronage intention using analytical hierarchy process. Accordingly, a mall's servicescape constitutes of elements such as the interior of a mall, social dimensions, internal displays, and exterior facility.

Swaminathan and Vani (2014) examined shoppers' perception and attitude towards shopping malls and highlighted 15 variables that had an influence on shoppers' attitude. Venkateswarulu and Uniyal (2007) identified a set of variables that describes consumers' intent to patronage a shopping mall. Chattopadhyaya and Sengupta (2006) posited that shopping malls with clear and distinct positioning had higher customer patronage.

It is evident from the extensive literature review that the studies have focused on identifying the causal relationship between the variables and mall selection. However, none of the studies have attempted to predict shoppers' mall selection behaviour and determine the relative significance of these antecedent factors. It is important here to differentiate the two terms: causation and prediction. Shmueli (2010, p. 291) defined causality as 'the application of statistical models to data for testing causal hypotheses about theoretical constructs'. And predictive modelling has been defined as 'the process of applying a statistical model or data-mining algorithm to data for the purpose of predicting new or future observations'. Based on these distinctions, it can be clearly seen that causation (explanatory modelling) deals with testing for causality by forming various hypothesis about the relationship between the variables. On the other hand, prediction does not deal with hypothesis formulation and identification of associated relationship. It aims to observe the data and predict the future outcomes based on the data (Shmueli, 2010). All the earlier studies in the field have identified the causal relationship and none of them have attempted to predict shoppers' mall selection behaviour. This was the motivation for the authors to undertake this study.

The researchers explore the predictability of selection of a mall using a non-linear compensatory technique on select antecedent factors and identifying the relative significance of these variables. We propose that the model developed using neural network technique would be a valuable tool for mall developers in predicting shoppers' mall selection behaviour.

OBJECTIVES OF THE STUDY

1. To study socio-economic profile of the customers visiting malls in Moradabad city.
2. To analyse the factors influencing shopping motivation of customers visiting malls in Local customer.
3. To find the customer loyalty factors among mall customers in the study domain area of Moradabad.
4. To study the influence of marketing focus variables to motivate the customer loyalty towards shopping malls.

RESEARCH METHODOLOGY

Both Exploratory Research and Descriptive Research were used in accomplishing the objectives of the study. Exploratory Research was used to gain insight into various variable discuss with visitor in malls the study area. Descriptive Research was used to analyse the Impact of Customer loyalty visit in malls. For the purpose of the study, both primary and secondary data are used. Primary data were collected through structured interview schedule. The secondary data were collected from magazines, journals, websites, libraries etc.,

Sampling Design

The sampling technique adopted for the study is convenience sampling technique. The samples are taken from all 5malls in Moradabad District. In all 16 branded outlets samples were identified on the basis of questionnaire method; the total sample is fixed as 100.

ANALYSIS AND INTERPRETATION LOYALTY OF CONSUMERS TOWARDS SHOPPING MALL

Factor analysis by the principal component method is applied on all the ten variables of opinion of consumers on shopping malls. The following results are obtained for the classification of the factors:-

Table:-1 Convenience to shoppers

Variable	Respondents	Strongly agree	agree	Neutral	disagree	It's ok	Rank
Ease of locating utilities such as water and restrooms	95	27.36	14.73	38.94	11.57	7.36	2.57
Number of specific lifts	80	41.25	10.0	16.25	22.5	10.0	2.50
Availability of benches to take rest during visit	74	18.91	35.13	28.37	14.86	2.70	2.47
Ease of locating shops	85	54.11	4.70	14.11	37.64	9.41	2.83
Distance of the mall from home	82	32.11	26.82	17.07	17.07	6.00	2.36

Table1. Clearly explains the customer loyalty by the sample respondents in the study area. The variable “**Ease of locating utilities such as water and restrooms**” are given second rank and The next Variable to “**Number of specific Lifts**” also given third rank is (2.57) and (2.50) respectively. The important Variable of first rank (**2.83**) from (85 %) respondents of given reason “**Ease of locating shops** “.The majority of the respondents are given fourth rank(**2.83**) to the above factors is “**availability of benches to take rest** “. Mostly respondent disagree with **distance of the mall from home** with the last rank (**2.36**) to loyalty of customers. There are such variable discuss the convenience of the consumer to loyalty toward the shopping malls.

Table-2 Safety and Security

Variable	Respondents	Strongly agree	Agree	Neutral	Disagree	It's ok	Rank
Commitment of a mall in handling acts of terrorism	80	41.25	16.25	22.5	10.0	10.0	2.31
Availability of fire extinguishers and emergency escape	82	13.07	32.92	17.07	26.82	6.09	2.72
Security features in the mall	76	18.47	34.21	28.94	15.78	2.63	2.50
Strength of the railing and other infrastructural facilities	85	34.11	4.79	14.4	37.64	9.41	2.83

Table 2. Clearly explains the customer loyalty for safety and security by the sample respondents in the study area. The variable “**Availability of fire extinguishers and emergency**” majority of the respondents (85%) are given second rank and the next Variable to “**strength of the railing and other infrastructure facilities**” also given third rank (**2.72**) from 82% respondents. The important Variable of first rank (**2.48**) from (85 %) respondents of given reason “**commitment of a mall in handling acts of terrorism**“ ; the majority of the respondents are given fourth rank(**2.31**) respondent to loyalty towards the safety and security concerns.

Table-3 Ambience

Variable	Respondents	Strongly agree	Agree	Neutral	disagree	It's ok	Rank
Background music played in a mall	72	19.44	33.33	27.78	16.68	2.78	2.50
Lighting in a mall	84	34.52	5.95	14.28	38.09	9.52	2.89
Cleanliness of a mall	77	19.48	33.77	28.57	15.58	2.59	2.48
Pleasant odour across the mall	90	36.67	25.26	20.0	8.89	8.89	2.28
Temperature inside the mall	84	34.52	5.95	14.28	38.09	9.52	2.89

Table 3. Clearly explains the customer loyalty in ambience by the sample respondents in the study area. The variable “**Lighting in a mall and temperature inside the mall**” majority of the respondents (84%) are given First rank respectively about the ambience facility of mall that is most attracted reason to visiting again in malls and The next Variable to “**Background music Played**” also given second rank(2.50) from 72 respondents given the reasons.

Table-4 Marketing Focus

Variable	Respondents	Strongly agree	Agree	Neutral	disagree	It's ok	Rank
Variety and mix of shops for complete shopping	98	32.65	26.53	24.48	14.28	2.04	2.27
Special events organized by a mall	95	34.73	18.94	33.68	10.52	2.10	2.26
Attractive appearance of a mall (façade)	98	30.61	16.32	28.57	16.32	5.10	2.39
Promotional schemes run by a mall	92	25.00	15.21	27.17	25.0	7.60	2.75
Interior design of mall	91	23.08	20.88	48.85	21.97	7.69	2.36

Table 4. Clearly explains the customer loyalty in marketing focus towards the mall by the sample respondents in the study area. The variable “**promotional schemes run in the mall**” majority of the respondents (92%) are given most time to the attract for that given the first rank with the 2.75 and The next Variable to “**Attractive appearance of mall**” also given second rank(2.39) from 98 respondents. The discussion factors in marketing focus for loyalty of customer toward the visiting malls.

SUMMARY OF FINDINGS AND SUGGESTIONS

1. It is found that all the three types of customers, supportive customers and believers holding post graduate qualification and confident customers with professional qualification are influenced by malls.
2. Among all the three types of customer's with different occupations, supportive customers working in private sectors, believers and confident customers with self-employed occupation are influenced by malls while purchasing in malls.
3. It is inferred that supportive customers and believers having two family members dependent on them whereas confident customers have three family members" dependents are influenced by malls.

4. The brand available in the malls induces the customers to visit the malls so that they can have accessibility of newly introduced brand through advertisement and transparent sales promotion. The brand introduced through celebrity advertisement attracts the customer to purchase the products and visit the mall frequently.
5. The different brand introduced creates awareness among the customers of malls and influences the customers to purchase the products that would explain their living status. The customers develop the intention of purchasing the products that are attractive to them feel new purchase experience while shopping in malls.
6. Mall appearance has influence on the sales promotion strategies that attracts the customers to develop the intention of purchasing the products. Sales promotion, purchase intention, product attributes, Purchase attraction, and Celebrity attraction are statistically significant and are influenced by the corollary effects and celebrity advertisement attracts the customers develop an intention of perfectly selecting the products disclosed in malls and assures the customers on the quality of those products sold in malls.
7. Mall appearance has an influence over the variety of brands introduced that is attracted by the customers, develop an intention of purchasing the products and create an exciting shopping atmosphere while shopping in mall.

DISCUSSION AND CONCLUSION

Findings of the article also generate vital insights on consumer behaviour in context of shopping malls in India. It was often debated whether Indian loyal shoppers look for hedonic or utilitarian benefits during their visit to a shopping mall. Since shopping malls are relatively new to the Indian markets, shoppers are expected to show initial euphoria due to the novelty value of the entity. In contrast with the traditional retail stores, shopping malls offer superior aesthetics, ambience, and marketing orientation. Presented as the key differentiators for shopping malls, these aspects should emerge as the dominant attributes when shoppers are contacted. Results of this study, however, give radically different results.

Results of this study, however, should be examined in its proper context. The respondents' sample came from Moradabad city since shopping malls first made their entry in the city only, shoppers living here have a higher level of familiarity with malls. This may have led to dilution of hedonic focus or 'wearing off' of novelty value. It means that making these malls look beautiful. Aesthetics and ambience seems to be a 'hygiene' factor in city. Here, special emphasis should be made on making these places convenient. In light of malls becoming crowded during peak hours and festive seasons, resources should be deployed preferentially to improve convenience. For this, mall managers need not confine to the list of attributes listed in this research, but visualize all possible ways in which shopping can be made more convenient.

Shopping malls are places to shop and are attraction centers for people to come together, to socialize, see new developments, do the shopping and serve as employment hubs. Changing dynamics of consumer behaviour and enormous brand choices has made the consumer to settle for nothing less than the best. Understanding what the consumer wants is the key to survive in the long run. An ideal shopping mall is the reflection of the

amiable relationship among the stakeholders mall developers, mall managers, mall tenants and the consumers.

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Dielectric and Thermal Behaviour of Yttrium Substituted Magnesium-Cadmium Ferrites ($\text{Mg}_{1-x}\text{Cd}_x\text{Y}_y\text{Fe}_{2-y}\text{O}_4$, $x = 0.2, 0.4, 0.6$ and $y = 0, 0.075$) Synthesized Using Sol-gel Autocombustion Method

R.B. Bhise

Department of Physics, B. J. College, Ale, Tal: Junnar, Dist: Pune, 412411, India.

Affiliation: Savitribai Phule Pune University, Pune, Maharashtra, India.

ABSTRACT:

Fine powders of Y^{3+} doped $\text{Mg}_{1-x}\text{Cd}_x\text{Y}_y\text{Fe}_{2-y}\text{O}_4$ (where $x = 0.2, 0.4, 0.6$ and $y = 0, 0.075$) spinel nanoferrite were prepared using a sol-gel autocombustion techniques and sintered at 400°C for duration of 2 hrs. The analysis of XRD patterns revealed the formation of single phase cubic spinel structure. The lattice parameter and crystallite size decreases with increase in Y^{3+} concentration and average grain size was found to be between 17.79 to 24.2 nm. The dielectric properties have been studied as a function of frequency (100 Hz to 5 MHz) at room temperature using LCR meter and shown the normal dielectric behaviour. The value of ac conductivity increases with increase in frequency for all the compositions. TG-DTA analysis of the auto combusted ferrites was carried out with a heating rate of $10^\circ\text{C}/\text{min}$ in air. These results may be applicable for promising area such as high frequency electrical devices.

KEYWORDS: Nanoferrite; Sol-gel autocombustion method; Optical properties; Dielectric constant; Thermal properties;

INTRODUCTION:

Ferrites are very good dielectric materials which have numerous applications at microwave to radio frequencies and plays a vital role in the technological applications (Chand *et al*, 2011). The study of dielectric properties gives valuable information and can explain the phenomenon of dielectric in the material. Several methods have been used in the preparation of nanoparticles, like the co-precipitation method, sol-gel technique, hydrothermal method, microwave sintering method, spray-spin-heating-coating method and autocombustion method. The ac conductivity increases with increasing in frequency and Cr concentration. The incorporation of Cr^{3+} for Fe^{3+} ions results in a significant impact on the dielectric behavior of the Cr-Zn ferrite system (Lakshmi *et al*, 2016). Out of all these, sol-gel autocombustion method is most convenient and promising technique to synthesize nanoparticles because of its simplicity, inexpensive precursors, short preparation time, better control over crystallite size and other properties of the materials (Srivastava *et al*, 2009). The dielectric properties of ferrites are dependent on several factors, such as the method of preparation, heat treatment, sintering conditions, chemical composition, cation distribution, pH, nature and type of substituent, the ratio of $\text{Fe}^{3+}/\text{Fe}^{2+}$ ions, frequency and crystallite size (Kharabeet *et al*, 2006; Nadeem *et al*, 2014; Huiliet *et al*, 2014). Y^{3+} substituted in Ni-Cd ferrite powders were synthesized by sol-gel autocombustion technique at low temperatures for different compositions and studied phase crystal structure with magnetic properties (Bhise *et al*, 2015). Ferrites are extremely important magnetic ceramics in the production of electronic components, electrical insulators, torsion sensors and energy storage applications such as anode materials in lithium batteries, fuel cells and solar cells. Yttrium doped cobalt ferrite was prepared using a sol-gel combustion technique and reported the resistivity of the prepared samples increased with increasing yttrium, so that conductivity should decrease with

increasing yttrium addition (Shobana *et al*,2013).The effects of heat treatment on nanocrystallineMnZn ferrite powders could be attributed to an increase in phase formation, crystallinity, microstructure and crystalline sizes(Pinget *al*,2010).The presence of Zn ions causes appreciable changes in the electrical and dielectric properties of CoFe₂O₄(Raniet *al*,2013).

The present work investigation on the synthesis of nano-sized Y³⁺ material substituted in Ni-Cd nanocrystalline ferrites by sol-gel autocombustion techniques and characterized by XRD and two probe methods. It reports the consequent changes on their structural, dielectric and thermal properties.

MATERIAL AND METHOD:

The Y³⁺ doped in Mg-Cd ferrite powders were synthesized by sol-gel autocombustion method at low temperatures for different compositions of Mg_{1-x}Cd_xY_yFe_{2-y}O₄ (Where x =0.2, 0.4, 0.6, and y = 0.0 and 0.075). The AR grade nitrate of Merck company (purity of 99%) are used in the experiments such as Yttrium nitrate (Y(NO₃)₃·6H₂O), Magnesium nitrate (Mg(NO₃)₂·6H₂O),Cadmium nitrate (Cd(NO₃)₂·6H₂O), Ferric nitrate (Fe(NO₃)₃·9H₂O). These nitrates and citric acid are using stoichiometric ratio proportion to obtain the final product and the citric acid (C₆H₈O₇) is used as a fuel in the ratio 1:3. The proportion of each reagent was defined according to its respective molar amounts. All chemicals are dissolved in distilled water and were stirred till to obtain the homogeneous solution. To maintain pH equal to 7 by adding drop by drop ammonium hydroxide (NH₄OH) during the stirring process. This solution was stirred continuously with 80 °C for about 4-5 hours to obtain sol. After 4-5 hours, gel converts into ash and finally ash convert into fine powder of Mg_{1-x}Cd_xY_yFe_{2-y}O₄ferrite nanoparticles after autocombustion. The powder was sintered at 400 °C for 2 hours.

The general chemical reaction of the synthesis sample is as follows;

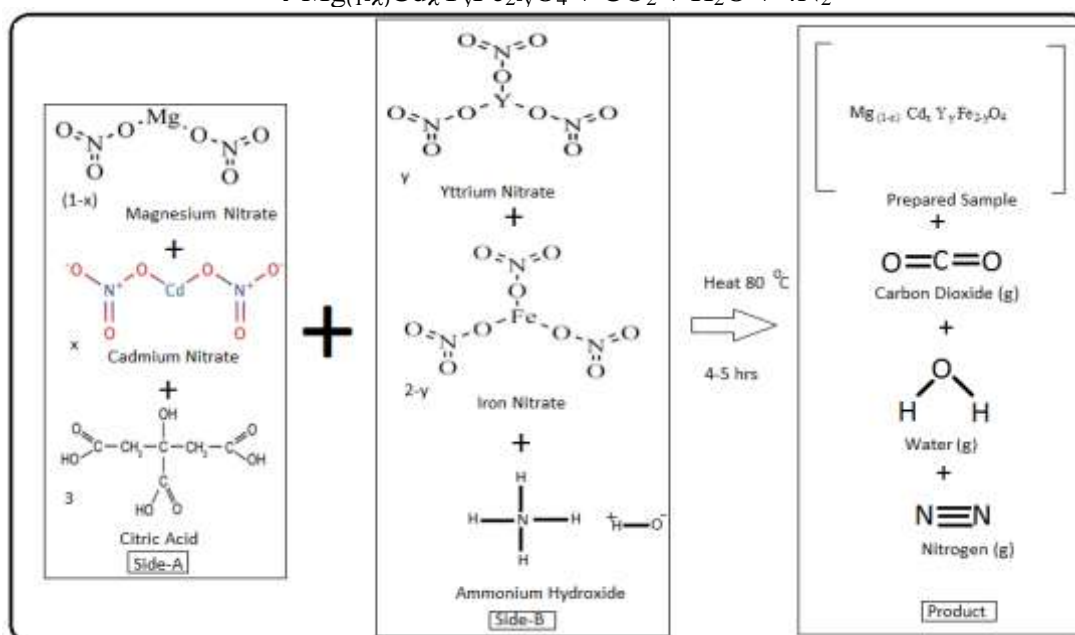
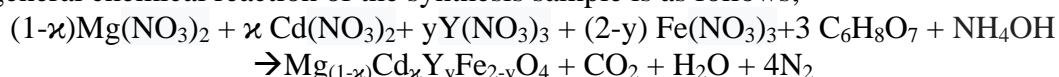


Figure 1: General chemical reaction of Mg_(1-x)Cd_xY_yFe_{2-y}O₄ for different concentration of Yttrium

The structural characterization was done by using XRD analysis. The X-ray diffract meter with Cu-K α radiation of wavelength 1.5405 Å at 40 kV performed a scanning from 20 to 80 degree at a step size of 0.02 degree per second for each prepared sample and determined crystal structure, lattice parameter and crystallite size. The capacitance (Cp) and loss tangent (tan δ) were measured by two probe method in the frequency range 100 Hz to 5MHz at room temperature using precision LCR meter (HIOKI Model L2000). The variation of dielectric constant, dielectric loss and loss tangent with frequency were studied. The frequency dependent AC conductivity was calculated from dielectric constant and loss tangent data. The DC resistivity measurements of the samples were performed by means of a four probe method. Thermogravimetric and differential thermal analysis (TG-DTA) of the auto combusted ferrites was carried out with a heating rate of 10 °C/min in air.

RESULTS AND DISCUSSION:

Structural Studies: The resulting powder Mg_{1-x}Cd_xY_yFe_{2-y}O₄ (Where x = 0.2, 0.4, 0.6, and y = 0.0 and 0.075) nano crystals were characterized by XRD pattern. The XRD pattern of sintered Y³⁺ doped the nickel-cadmium ferrite as shown in figure-2. Obtained XRD pattern and crystalline phases were identified and it conform the formation of a homogeneous well-defined spinel cubic structure. The broad peaks in the XRD pattern indicate a fine particle nature of the particles. The particle size was determined using Scherer's formula,

$$t = \frac{0.9 \lambda}{\beta \cos \theta} \dots \dots (1)$$

Where, λ = Wavelength of X-ray, θ = Peak position and β = FWHM of the peak θ and it is corrected for instrumental broadening. The average particle sizes of nanoparticles are given in Table-1. The particle size decreases as the concentration of Y³⁺ increases. Lattice parameter obtained for prepared sample is ranging between 8.3399 to 8.3665 Å. The deviation in lattice parameter can be attributed to the cations rearrangement in the nano sized prepared ferrites. The value of lattice constant for Mg-Cd doped yttrium ferrite shows the expansion of unit cell with rare earth doping when compared with pure yttrium ferrite. This is expected due to substitution of large ionic radius of Y³⁺ ions (0.9 Å) with small ionic radius Fe³⁺ ions (0.645 Å). This result in Y³⁺ substituted ferrites to have higher thermal stability relative to Mg-Cd ferrite. Yttrium doped Mg-Cd nanoferrites were synthesized with average grain size ranging between 8.3562 to 8.3667 nm which will give great effect on its dielectric and thermal properties.

Table-1: The particle size of Mg_{1-x}Cd_xY_yFe_{2-y}O₄ by XRD

Obs.	Composition	Average grain size (t) nm	Lattice constant (a) Å
1	Mg _{0.8} Cd _{0.2} Fe ₂ O ₄	24.2	8.3601
2	Mg _{0.8} Cd _{0.2} Y _{0.075} Fe _{1.925} O ₄	23.24	8.3562
3	Mg _{0.6} Cd _{0.4} Y _{0.075} Fe _{1.925} O ₄	18.53	8.3667
4	Mg _{0.4} Cd _{0.6} Y _{0.075} Fe _{1.925} O ₄	17.79	8.3658

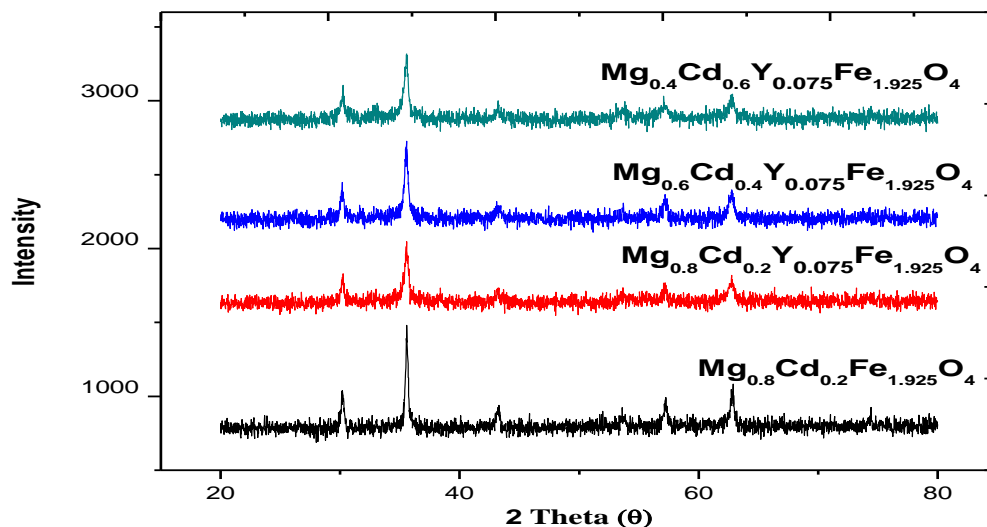


Figure 2: Structural properties of $Mg_{1-x}Cd_xY_yFe_{2-y}O_4$ by XRD

Dielectric Studies: Dielectric measurements were carried out at room temperature over a wide frequency range from 100 Hz up to 5 MHz. The value of dielectric constant is calculated by using the following relation:

$$\epsilon' = \frac{Cpd}{\epsilon_0 A} \dots \dots \dots (2)$$

Where, ϵ_0 is the permittivity of free space, d is the thickness of the pellets, A is the area of cross-section of the pellet and C_p is the measured value of the capacitance of the pellet.

The variation of dielectric constant and dielectric loss tangent with frequency for the as-prepared ferrites doped with different amounts of yttrium ions are shown in figure-3 and figure-4 respectively.

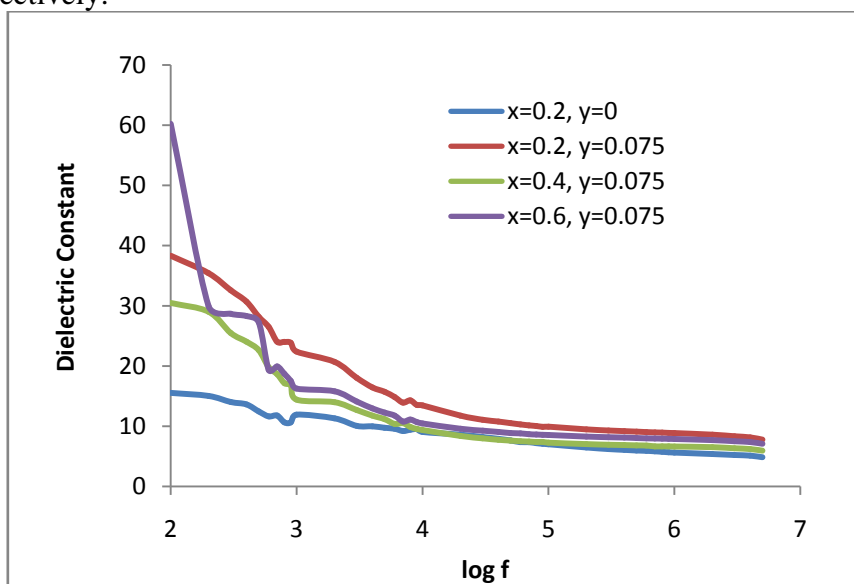


Figure 3: Variations of dielectric constant with frequency of $Mg_{1-x}Cd_xY_yFe_{2-y}O_4$ nanoferrites

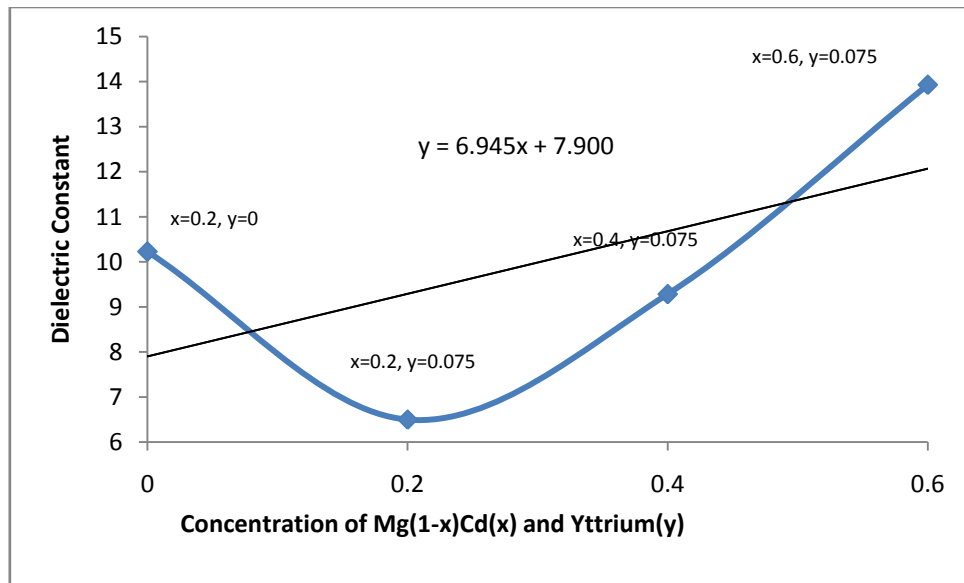


Figure 4: Variation of Dielectric Constant with Y^{3+} content of $Mg_{1-x}Cd_xY_yFe_{2-y}O_4$

Figure-3 shows the variation of dielectric constant as a function of frequency at room temperature from 1 kHz to 5MHz. It is observed that for each sample the dielectric constant decreases with an increase of frequency and a normal dielectric behaviour of spinel ferrites. This can be explained on the basis of mechanism of polarization process which is similar to that of conduction process. The whole polarization in ferrites is mainly contributed by space charge polarization, the conductivity in materials and hopping exchange of the charges between two localized states.

The value of dielectric loss tangent is calculated by using the following relation:

$$\epsilon'' = \epsilon' \tan \delta \dots \dots \dots (3)$$

From figure-3 it is observed that the small variation of dielectric constant occurs up to 1000 Hz frequency and from the frequency 5000 Hz, it becomes stable.

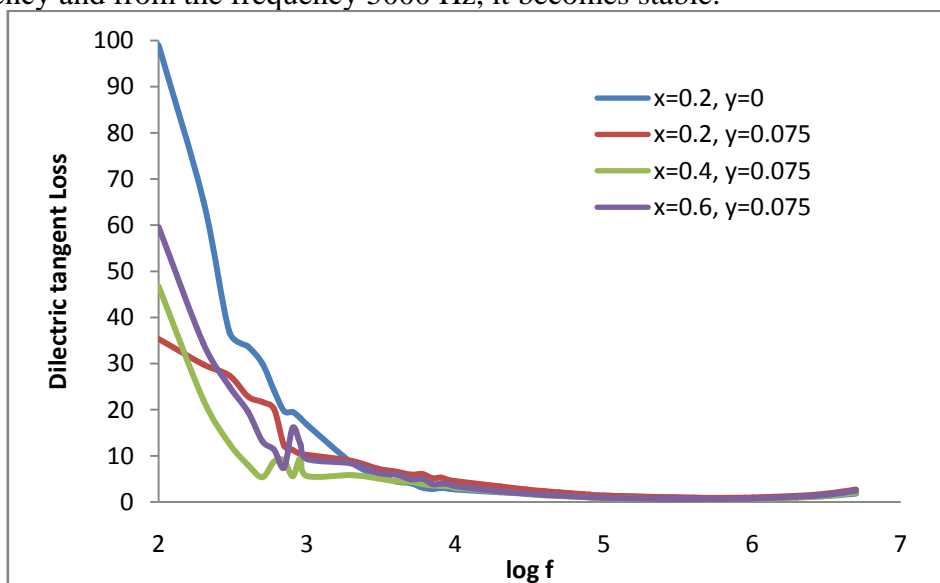


Figure 5: Variations of dielectric loss with frequency of $Mg_{1-x}Cd_xY_yFe_{2-y}O_4$ nanoferrites

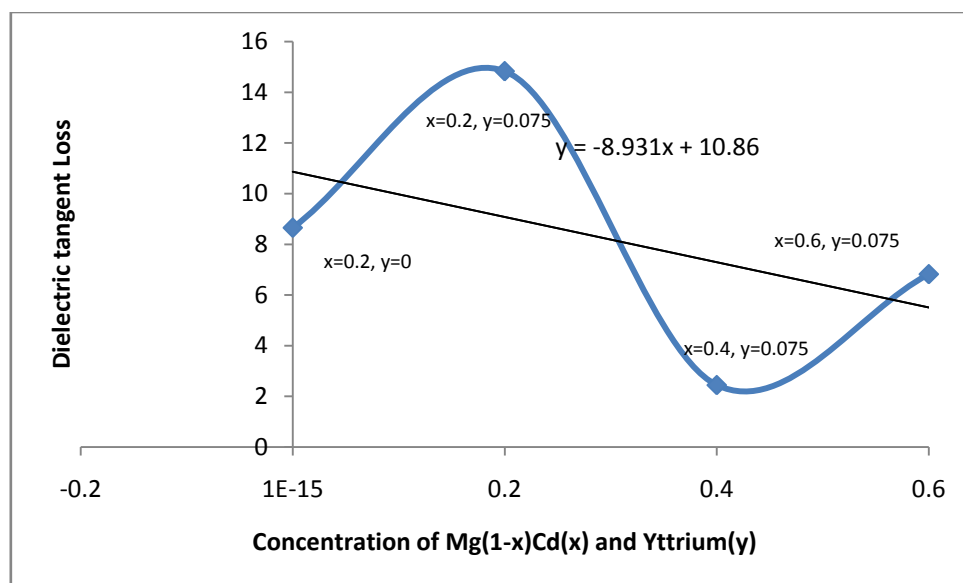


Figure 6: Variation of Dielectric tangent loss with Y^{3+} content of $Mg_{1-x}Cd_xY_yFe_{2-y}O_4$

Figure-5 shows the frequency dependence of dielectric loss in $Mg_{1-x}Cd_xY_yFe_{2-y}O_4$ nanoferrites. The value of dielectric loss tangent is very low in the present work indicating that the samples are structurally perfect. From figure-5 we conclude that the dielectric loss tangent is very low and varies up to 1000 Hz and above that it becomes stable. The AC conductivity of the sample can be evaluated from the dielectric permittivity (ϵ_0) and the loss factor ($\tan \delta$) using the equation

$$\sigma_{AC} = 2 \pi \epsilon_0 f \tan \delta \quad \dots \dots \dots (4)$$

Where, f is the frequency.

The variation of dielectric constant, dielectric loss tangent and AC conductivity with frequency for the as-prepared ferrites doped with different amounts of yttrium ions are noted in following table.

Table 2: The Value of dielectric constant, dielectric loss tangent and AC conductivity with frequency

Concentration	Q	ϵ'	ϵ''	σ_{AC}
x=0.2, y=0	10.2277	3.68E-05	8.6501	3.5227
x=0.2, y=0.075	6.4976	5.04E-05	14.8305	4.6909
x=0.4, y=0.075	9.2828	3.63E-05	2.4459	5.3534
x=0.6, y=0.075	13.9294	4.29E-05	6.8241	5.4791

The AC conductivity increases with increasing frequency at low temperatures.

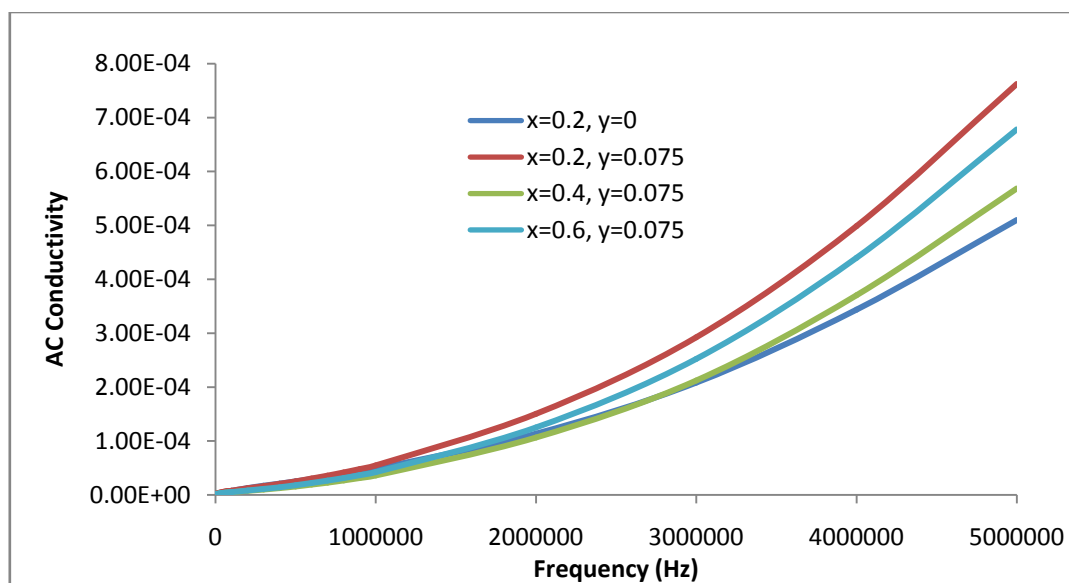


Figure 7: Variations of AC Conductivity with frequency of $Mg_{1-x}Cd_xY_yFe_{2-y}O_4$ nanoferrites

Figure-7 shows AC conductivity increases linearly with the frequency.

Thermal Studies:

In order to investigate the mechanism of the Y^{3+} doped Mg-Cd ferrites autocombustion, Thermogravimetric analysis (TGA) and differential thermal analysis (DTA) was carried out with a heating rate of $10\text{ }^\circ\text{C}/\text{min}$ in air and the results are shown in Figure-8 and Figure-9 respectively.

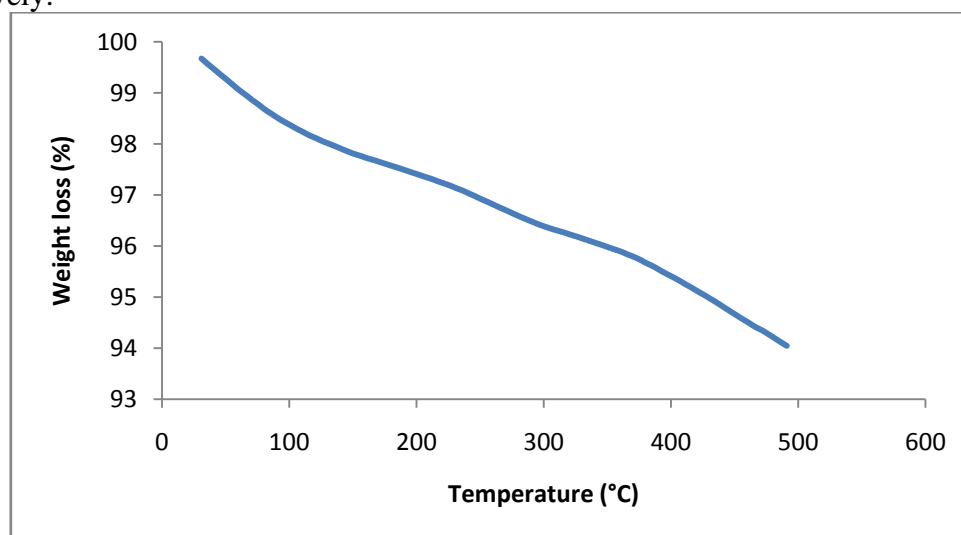


Figure 8: TGA curve for $Mg_{0.8}Cd_{0.2}Y_{0.075}Fe_{1.925}O_4$ nanoferrites

From TGA analysis it is observed that as the temperature increase the percentage weight loss decreases.

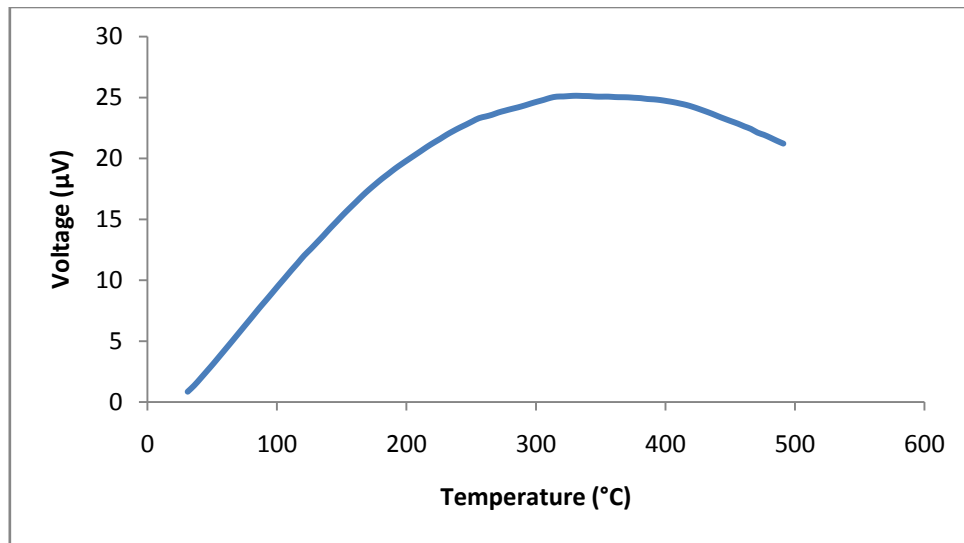


Figure 9: DTA curve for $Mg_{0.8}Cd_{0.2}Y_{0.075}Fe_{1.925}O_4$ nanoferrites

From DTA analysis we observe that with increase in the temperature the voltage increases up to $316^{\circ}C$ and it decreases with the increase in temperature.

CONCLUSIONS:

Nanostructured $Mg_{1-x}Cd_xY_yFe_{2-y}O_4$ (Where $x = 0.2, 0.4, 0.6$, and $y = 0.0$ and 0.075) powder were successfully prepared by sol-gel autocombustion method and the conclusions can be summarized as follows;

- 1) The XRD pattern shows that nanoparticles decrease with the increase in Y^{3+} content.
- 2) A dielectric study indicates that for each sample the dielectric constant decreases with an increase of frequency and a normal dielectric behaviour of spinel ferrites. The value of dielectric loss tangent is very low in the present work indicating that the samples are structurally perfect. The AC conductivity increases with increasing frequency at low temperatures.
- 3) From TGA analysis it is observed that as the temperature increases the percentage weight loss decreases and from DTA analysis we observe that with increase in the temperature the voltage increases up to $316^{\circ}C$ and it decreases with the increase in temperature.

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